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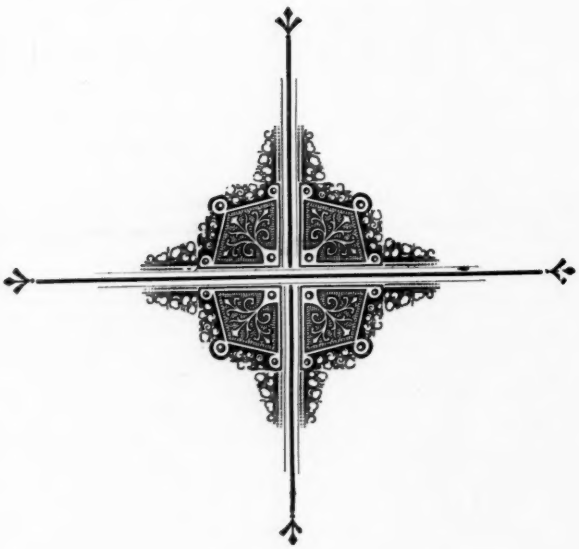

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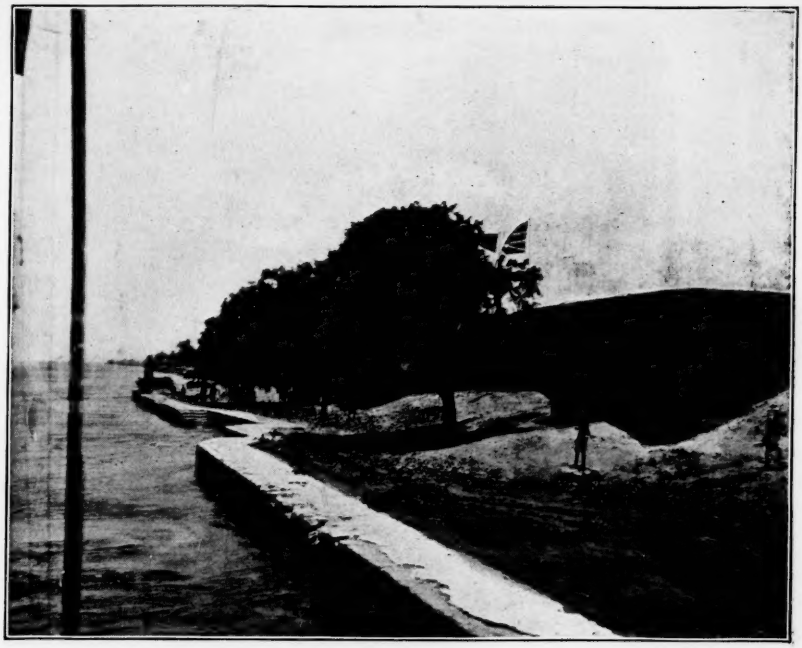
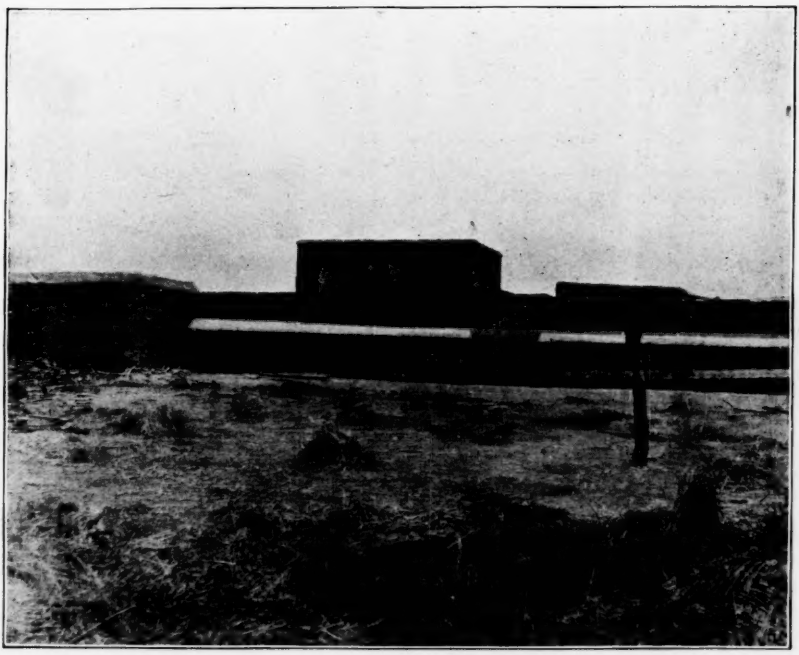


RUINS OF GORDON'S PALACE, KHARTUM, FROM THE RIVER.



KHALIFA'S HOUSE, FROM GREAT MOSQUE.

From Photographs taken on the spot by Lieut. Hon. E. D. Loch, D.S.O., Grenadier Guards.

THE JOURNAL
OF THE
ROYAL UNITED SERVICE INSTITUTION.

VOL. XLIII. JANUARY, 1899. No. 251.

[*Authors alone are responsible for the contents of their respective Papers.*]

THE PRESENT SITUATION ON THE INDIAN FRONTIER.

By the Right Hon. Sir RICHARD TEMPLE, Bart., G.C.S.I., C.I.E., D.C.L., LL.D., M.P.

Thursday, December 8th, 1898.

Lieut.-General Lord METHUEN, K.C.V.O., C.B., C.M.G., in the Chair.

MAY I begin by reminding you of the qualification I am supposed to possess for addressing you on such a subject as the North-West Frontier of India? Well, I was for some years Secretary to the Government that administered the northern half of that frontier, and for several years I myself governed the southern part; so that I have been officially connected with it from the northern down to the southern extremity. May I also remind you that this subject, although in the first place Indian, is, nevertheless, assuming world-wide importance? If you take the most recent case, that of England and France, you recollect how disappointed France was at not obtaining Russian support. Now what did she mean by that? Did she suppose that Russia could render any naval assistance in the event of war with England? She knew, and Russia knew, that a squadron from the Black Sea going to aid the French at Toulon, when they were blockaded by the British, would be picked off when it emerged into the Mediterranean. If, on the other hand, the squadron went from the Baltic to remove a British blockade at Cherbourg, why, it would be stopped and destroyed in the Straits of Dover. What was it then that France expected and was so disappointed at not receiving? Of course, it was a demonstration from Russia towards the North-West Frontier of India. Russia did not see her way at that time to make such a demonstration, and therefore she advised France to yield. But take the Russian view of the case. Only last week a pronouncement was made in the Russian Press at St. Petersburg—and

this Press is either inspired or is under censorship—to the effect that Russia was making a great mistake in fortifying herself with Port Arthur and along the coast of Manchuria, because that was only giving pledges to misfortune, to be victimised in the event of war with England. "No," said the Russian authority—this is only another common expression—"Port Arthur is the vulnerable point in the heel of Achilles; let us give up that, and concentrate all our energies towards the North-West Frontier of India." Well, it is a long cry from Paris to Port Arthur, but along that immense line, by political electricity, was flashed the words "The North-West Frontier of India," and that sound has now re-echoed at the headquarters of every Government and every Army in Europe.

Now, I do not profess on this occasion to describe to you the geography of that frontier. I assume, as I justly may, that you all know it. Therefore I shall not enter upon that tempting theme of the strategic topography, of the grand scenery, and of the historical and noble circumstances connected with it. No; I will keep all my time, which I really want, for the military and political problems which I have to submit to you. Therefore I shall divide my address into two parts—first, the frontier proper, and then the Russian relations regarding it.

In the first place, let me begin with Chitral. The Government of India was perfectly right in taking and occupying that place and in making and maintaining a military communication with it. And why? Because it lies near the base of the Pamirs, that elevated plateau which is called, of course, the roof of the world. When the Pamir plateau was partitioned between England and Russia, I rather think that Russia had been allowed in that partition to get somewhat inconveniently near that corner of our frontier on the extreme North-West. But Chitral lies at the base, and in the event of war or trouble with Russia her scouts would cross her Pamir frontier and traverse our piece, for we never keep any establishments in that snowy region; and then they would peer down and see what was going on in the upper valleys of the Indus. Now, if that sort of movement were unchecked, or, at all events, if it were not stopped even, the moral effect upon Kashmir and the outlying portions of the dominion would be very bad indeed. There would be a clear case of Russian scouts approaching, not to the frontier of Afghanistan or to any allied State, but within the red line even, the limit of British dominion, of a British vassal State, and for that to happen unchecked would have a very bad effect. Therefore it is so important to keep Chitral.

Now I pass on past the Peshawar Valley and the Afridi country to the Khyber Pass. There is no more absolute proposition than this, that we should have command of that pass. And why? The answer to that involves the question of the Ameer of Kabul. He is a typical instance of a man between two fires. In his own native version I dare say he translates to himself the old English saying "How happy could I be with either, were t'other dear charmer away!" which means "How well could I get on with the British if the Russians were out of the way; what comfortable terms I should make with the Russians if the English

were not behind me!" The consequence is, he is always wobbling in his mind. Generally, he sees that our star is in the ascendant, but of late years there is no doubt Russian prestige has increased enormously in Central Asia. When he thinks of all that, he somewhat inclines towards Russia. But we may hope that this Ameer at least will be faithful to us. He has reason to be so, of course, but no one can read the Afghan heart; of all hearts it is the hardest to read. But at any rate he must obviously follow his own interest, and that lies with us. During the last war, however questionable his conduct may have been at the first, he ultimately behaved well and faithfully towards us, and so we may hope he will continue. But he must know that, in the event of war between ourselves and Russia, he will be invaded, and the question with him is, Can he depend upon our protection? I do hope that we have given him the fullest assurances in that respect. I do not venture to affirm that, but I recommend anyone who doubts it to obtain official information. I hope it has been the case—an absolute, unreserved assurance that if he is attacked by Russia in consequence of his conduct towards us, he will be supported with the whole might of the British Empire. For such protection it is necessary that we should be able to defend him at least with an army corps at Kabul. I submit that proposition to be self-evident. We must be able to defend the Ameer in the last resort with a British army corps at Kabul, with a temporary railway from Peshawar and our base there. That is the one great argument of the Khyber Pass.

But that is not the only one. This Ameer, we hope, is faithful, but he is an elderly man now; and are you sure under what auspices and education and circumstances his successor is being brought up? Even then, who knows what may be the consequences of a palace revolution? Are you always sure that there will be a faithful and loyal Ameer? Have you ever heard of an instance to the contrary? Think of that poor Shere Ali, who acted as a traitor to us, and lost his crown and his life in consequence. Well, the Ameers and their successors have several times tasted of British cold steel, but never, as yet, of the Russian. Still, who can say what line they may take? Therefore it is necessary that Russia should know, and that the Afghans should know, that we have the power of enforcing loyalty to the solemn engagements made between Afghanistan and us; and that is undoubtedly the second reason which I may state without any breach of diplomatic discretion. It is no part of diplomacy to conceal notorious facts which, if not known to us, are known to everybody else. Those are two tremendous reasons for the command of the Khyber Pass.

But it is one thing to command a pass, and another thing to hold it. I do not undertake to say that it is necessary to hold the Khyber Pass, that is to say, to have military posts and British troops inside it. I do not say it is not necessary, but I do not undertake to recommend it. I believe that the Government of India, with the sanction of the Government of England, has determined so to hold it; and certainly whatever the Government of India decides to do, you may accept as the nearest

approach you are likely to have to political wisdom in the world. I believe that of the Government of India. But still, there it is, an arguable question either way. There will be certain objections and difficulties connected with the military holding of the pass.

Now, what are those difficulties? In the first place, it will be disliked by the Afridis—those Afridis who fought us in the Tirah campaign. They have shown a very remarkable power of combination. I have known the Afridis now for full forty years, and I never heard of such a combination before. It was a most momentous and portentous circumstance, which in many respects should be a warning to us, however decisively they may have been overcome by the skill of our officers and the gallantry of our troops. Nevertheless, its recurrence must, if possible, be prevented by political means. Now, what may we suppose were the causes of that extraordinary combination? Of course, the official authorities all say it was fanaticism. Well, that no doubt was the spark that set a combustible mass on fire; but what rendered the mass combustible? The main cause, no doubt, of that was set forth by the Afridis in many of their proclamations, which you may find in the Blue Book. They had consistently said from first to last that the reason of the revolt was the frequent encroachment by the British upon their country. They said they had been hemmed in in all directions, and that their independence was threatened. Nothing was further from the intention of the Government of India than to threaten that independence. But then sometimes we unconsciously do things which have a different effect to that which we intended, and no doubt there was something of that kind. If you wish for a very full statement on this point, I would refer you to a remarkable speech made by the Earl of Northbrook last February, in the House of Lords, in which, with the knowledge of an ex-Viceroy, he set forth the various points of the North-West Frontier, in which he thought we had slightly transgressed the policy of the previous Government. I am not condemning the recent policy. I merely mention it as a fact, and we must take notice of it. Therefore, there is a danger lest our holding of the Khyber Pass should set up the Afridis or keep that war, like fire, still warm. If that has been decided upon, we should spare no pains to assure the Afridis, in common with all the tribes, that their independence under us is absolutely secure. Let us try and ask them what possible guarantee they require, and then, if possible, grant it, so that they may be perfectly satisfied with us in that respect.

Then the other cause was what is known as the Durand boundary. As was intended by the Government of India it was nothing more than a delineation between Afghanistan and that belt of independent tribes, which lies along this North-Western Frontier. But you see in the estimation of those tribes it had the effect of their seeing British officers with a strong escort in their rear, while they had British dominion in front of them, and they felt themselves surrounded. It is just one of those things which it is impossible to make those semi-barbarous tribes understand, and this was no doubt one cause of the revolt. Certainly, if we had gone to war with France the other day, and

Russia had allied herself with her, which would have been probable, and if we had had this war on our hands this year instead of last,—I do not say it would have been disastrous, but it would have greatly aggravated the burdens which our country has to bear. We should not allow it to occur. I do not doubt that with the good political arrangement the Government of India is capable of making, we shall prevent a recrudescence of these dangerous alarms. Recollect that these tribes have no wish to be at permanent enmity with us. Although they live in their mountains and cherish their independence, they must come down to our villages in the plains for half their food and many other things they require. They depend on the villages of the trans-Indian territories almost as much as England depends for her food supplies on foreign countries. Therefore we ought to be able to keep them satisfied.

Well, our policy with them might have been of two or three kinds. One kind was to treat them as Russia treated Circassia after the Crimean War; it was little short of extermination. I need not dwell upon that, because such a policy would never be undertaken by the Government of India, and would not be suffered by the people at home. The second plan was to try and administer that territory as we had those of many parts of India, and all territory near our borders elsewhere, and the like. Well, that probably would be too expensive, and it would never succeed with the tribes; they would never submit to it. It would be an incessant revolution, or rather a revolt, an insurrection and repression, ending, of course, in what I may call the Circassian method. So that second alternative really is not to be thought of either. Now, may I mention one point? It has been said by an authority, for whom I have the greatest friendship and respect, that that is a plan of administering these independent tribes which is not so impossible as people suppose, because it had been done with effect by the Bombay Government—which I had the honour of conducting—with many tribes in the south on the same frontier. Now, there are tribes and tribes, and tempers and tempers; and it does not follow because the tribes in a fair territory in a valley, with hills not so steep and rugged, have a manageable temper, that these Afridis in a different country should have a similar temper. There is the greatest difference in the world between the two tempers. The Creator who made the hills in the south comparatively low and easy of access, with gentle slopes, gave the tribes a mild temper; the same Creator who made the rugged ravine and the tremendous precipices and the inclement climate, of course has given the inhabitants a temper in correspondence with their surroundings; and you will never make the two assimilate.

Well, so much for that matter of the tribes, which is one of extreme importance, because, if we manage well, as I believe the Government of India will, then we should have them as comparatively loyal adherents, at any rate spectators, of any dangerous trouble we may be involved in with Afghanistan or Russia, for it comes to the same thing. We may have them as benevolent spectators, but we may have them as a desperate danger on our flank, and I hope this will be avoided.

So much just for that part of the subject. Now I pass on from Peshawar and Tirah, past Kohat to Bannu. Near Bannu, I may just remark, while I am on the frontier, that there is the Koorram Valley, and from this valley there are two passes which lead direct to Kabul. Many people in my time considered that that was the best approach to Kabul. However, authorities nowadays think otherwise; but to show you the advantage of that Koorram route, by the Paiwar Kotal Pass, which is now the British boundary, and the "Shutar Gardan," or Camel-neck Pass, which leads straight down to Kabul—to show the importance of those two passes, I merely remind you that when General Roberts went to avenge the murder of Cavagnari and the massacre of the Embassy, he got there in very good time through this Koorram Pass. But I believe the importance of this route has now quite waned, as the old route by the Khyber has waxed, and I have no doubt that, taking it all in all, with Peshawar at its base, it is better to keep to the Khyber route.

So I pass on southwards until we get to what is called the Goomul Pass, just opposite Dera Ismail Khan, and just at the foot of Solomon's Throne, the Takhi-i-Sulaiman mountain. Now, that is a pass of first-rate importance, because if you look at the map you will find that the route from there to Kandahar runs westward in what is called a bee-line. This is the pass by which invaders have more than once burst upon India, and I should have little doubt that if, as I will explain presently, a critical battle were fought for the possession of India between England and Russia at Kandahar, and if, as is almost impossible, or violently improbable, the British position there was lost, the Russian commander would make straight for the bee-line to the Goomul Pass and burst into the middle of the Punjab, disconcerting many other arrangements we might have made. Therefore I do think this Goomul Pass has not been sufficiently looked to—it might on military examination turn out to be a group of passes. An amount of attention was paid to it in the transactions which led to the recent war, but nothing effectual has been done to command the mouth of that pass towards India. I do not at all recommend occupying it. I recommend commanding it; that is, making such arrangements at the Indian mouth of it as shall enable us to block it if we require to do so, or traverse it if it suits us on political emergency.

And inasmuch as there runs down the left bank of the Indus a continuous railway from north to south, I submit that opposite Dera Ismail Khan, and opposite this Goomul Pass, a viaduct ought to be constructed so that we shall be able to take an army corps across that river at will, if necessary, because it would be a second string to our bow in the event of anything happening at Kandahar. That I submit to you is a matter of first-rate military importance. We should never know how important it was until something had gone wrong with us at Kandahar in the front. You will find a great deal about it in the writings of the late Sir Robert Sandeman, who was an intimate friend of mine.

Now I will get a little further south, and we come to Sukkur, and the great railway viaduct there. As you know, there runs from there a

railway across the Sibi desert up to Quetta. Inside the mountains Quetta has become a great basis of military operation, which would be, of course, of supreme importance in the event of war with Russia. From Quetta, as you very well know, there runs a line through Pishin piercing the Khoja Amaram range by the Khoja tunnelling. I suppose for military strategy, in the event of extreme danger, there is no more important work in the British Empire than that tunnel, which takes us straight on to the plains that lead to Kandahar. I feel it almost a pride amongst the memories of my existence that I had so large a share in the initiation and making of that railway across the Sibi desert up to Pishin. From the mouth of this tunnel, which you know by the name of Chaman, there is a comparatively easy road of about 90 miles to Kandahar, which could be ridden in a day. I have done that myself.

Now we get to Kandahar. I submit to you, as a body of experts, that if Russia attacks us by the south-western route, which is the most likely one, that we should give her battle at Kandahar. In every way that is a valuable military position. The commander of a British army corps there would have a desert on his left, which could not be turned; he would have a river on his right, which would be turned only with great difficulty; and in his rear a district, one of the richest on the face of the earth, limited in area but boundless in fertility and abundance. He could draw his supplies from there, and from there he would have a temporary railway running from Kandahar to Chaman, which could be made in two-and-a-half or three months at the rate of a mile a day; and from thence, of course, he would have railway communication with India. You cannot imagine a more beautiful spot for a British commander than that. In front he has a rough and half-desert road of 300 miles or more, which an enemy must traverse to approach him; and that is the position for the British I submit from the military point of view. The political advantage, of course, is enormous, because one does not want India to see us fighting with Europeans; better that there should be a veil over that tremendous transaction. Let the fight go on behind the mountains—tolerably near to us no doubt, but not too far from our base; everywhere convenient, but hidden from the sight of all the Indian peoples except the gallant men engaged in it on our side. That is an enormous political advantage, and you can take my word for it.

So much, then, for Kandahar. You have heard that a temporary railway can be run from Chaman to Kandahar within three months at the rate of a mile a day. The last act I ever did before I left India was to give orders for it being done; so I know exactly what I am talking about; and its execution was only prevented by a general election in Britain and a change of Government in India.

This concludes the first part of my address. You see, I have run over the points briefly in order to give myself time for the second part, which is really the most important, namely, the relations of Russia towards this frontier. I do not, of course, want to say anything which is hostile to Russia, more than I can help. Of course, we wish to remain at peace with Russia, and with everybody else. Let her develop Central

Asia and pacify the turbulent and semi-barbarous tribes, and let her spread her railways and increase her cultivation, and send her surplus food to us as much as she likes; and if she likes, let her borrow British capital. We are not sorry there to find a field for our enterprise. But if she tries to take our country from us and to prevent our legitimate expansion in other directions, well then, she will be sowing the wind, and I am sure that she will reap the whirlwind. We wish peace, but it must be peace on safe and honourable conditions. If we cannot get that we will fall back on the old saying, that there are worse evils than war. I submit to you that that is my political creed before I begin on the subject of the relations of Russia to this frontier.

In the first place, let me just remind you of two facts. You have read the Tsar's proclamation about universal peace and general restriction of armaments. I will not say disarmament, but cessation of preparation for increased armament. I will not say anything now this moment of what Russia is doing in China, but I shall just mention two circumstances up to date, the most recent occurrences, now going on on this Indian frontier, on which I just ask your patriotic judgment as to whether these proceedings are consistent in any degree with the spirit of that proclamation. In the first place, she is building as fast as she can go her railway from Merv to a place called Koshak on the Afghan frontier, within 70 miles of Herat. Supposing that the railway called the Trans-Caspian Railway which runs from the Caspian Sea to Merv, was a civilising and a commercial project; let us grant for the sake of charity, if you like, that it was a commercial and civilising railway, and so on to Samarcand and Bokhara; what are you to say about the peculiar branch of 100 miles from Merv to Koshak? Is it not the most transparent sophistry to say that is merely a civilising project? It is of course a menace to England, and nothing short of that. Don't let anybody, for the sake of charity or peace, deceive themselves in that matter. It is an unfriendly act of the most overt kind. We have heard a good deal about unfriendly acts. I am sure no act of France was more dangerously unfriendly than this. I believe within a very few months it will be completed, and its effect will be apparent on the policy of Afghanistan. I will tell you of another, not so dangerous, although perhaps a worse case than that. It is within my certain knowledge that at this moment Russia is sending all sorts of officers and small establishments to hunt up the Afghan frontier towards Seistan. She availed herself of her position in Northern Persia to do that. Now, to use a common expression, what is she poking her nose in that part for, sniffing about in that way? It means the preparation of a menace, and nothing short of that. She has no business whatever there, commercial or political or anything else, except that of bothering Afghanistan, and through Afghanistan bothering England, and consolidating her policy of menace. That is really what it is. Of course, we must come to terms with Persia about all that; but on this occasion I will not talk about that point. It would require, perhaps, a second address for me to explain fully British and Russian policy as regards Persia. I merely confine myself to the policy of Persia towards Afghanistan. These are two acts of Russia up to date, and

so you see what it really amounts to. And when you say that this Trans-Caspian Railway, or if they say that this Trans-Caspian Railway was merely a civilising and a commercial project—well, if ever there was a military railway, made altogether by military means, under military arrangements, it was that, and its policy was declared by Skobeleff. Now, considering that Skobeleff was the conqueror of Geok Teppe and the victor of Merv, and destroyed the Turkoman power, substituting the Russian power for it, I should say he is a pretty good judge. He said, and his words are on record, that he was practically sure that "Not for a generation or more to come would Russia be able to advance beyond Herat upon India. But in the meantime, by this railway of ours we are assuming a menacing position towards England, which will keep her occupied in India and prevent her impeding us in other parts of the world." He went on to allude to the Eastern Question—of course he meant Constantinople. Now, I think you had better take the word of Skobeleff than the word of what I may call benevolent people who think of nothing but peace at any price. Peace let us have, but not at any price. Now, these railways of Russia are, of course, largely extending. There is first of all the Trans-Caspian, which you recollect runs from the eastern shores of the Caspian Sea to within striking distance of the Herat frontier. The first idea was, that part of the nearest point where the bend of this railway approaches the Herat frontier—where there is a place called Doshak, which is Persian for "bifurcation"—the railway would be carried to the Herat frontier. Now, the Russians have decided otherwise, and are making the railway, as I have already explained, from Merv, which comes to the same thing practically. Then from Merv the railway has for some years past extended from Samarcand to Bokhara, and now from Samarcand it has been completed to Tashkend, with a view to an ultimate extension to Balkh, on the Oxus River. That of course is a considerable extension, but I wish to explain to you presently that it does not particularly help Russia. What will help Russia some day is this, that she has now got her railway extended from the main trunk line of Siberia, which runs from west to east, and from that trunk line she has her railway extended to Orenburg, which is the south-west corner of Siberia. From Orenburg she will have, in the course of a very few years, a railway on to the Sea of Aral, and then to Khiva and so on to Samarcand, and will thus complete a regular circle by the Trans-Caspian Railway to the Caspian Sea. That will give her, of course, a great additional military power; but still I wish to say that these extensions will not much alter the conditions of her possible invasion of India. The differences may be in degree only and not in kind, as I will immediately explain.

But before I go any further upon this point I should just like to mention that there are two lines of possible advance. One would possibly be from Samarcand or Bokhara to the north of the Oxus, near Balkh, on to the Indian Caucasus by the valley of the Oxus, to Bamian and so on, to Kabul, if she should ever get there. That is the first line, and that is the hardest and least probable. The second line is from the shores of the Caspian, or rather from Baku at the end of

the Caucasus, across the Caspian Sea to the east shore of the Sea, then on to Merv, and so on to Herat, and then on to Kandahar, where I believe the great battle would be fought in that case. I beg you to bear in mind those two lines, the northern and the south-eastern, which I have already mentioned.

Now, as regards both these lines, there is no doubt of the importance of the railway extension; but I venture to say—and this will be really the most important point in the whole of my address to you this afternoon, if it shall find favour with you—that no writer that I know of on these subjects, and they are many, has ever adequately dealt with the question of transport and supply. There has only been one author who has attempted it, and he was the anonymous writer of some newspaper articles, of which copies were sent to me. I was very much struck by them. But no writer, in his own name, in any book of authority, has ever dealt with this tremendous question. I do hope in a very few minutes to make this point clear to your expert minds. It is assumed that, when the railway is made, all the Russians would have to do would be to send an army along it. Now, when you come to look at that, pray consider that that is not an easy proposition. In the first place, it is a single line. Of course they may make sidings, and so on, at different points, and so facilitate matters; but still it would remain a single-line railway. To send on even 40,000 men, with all their impedimenta included, along a single line, for several hundred miles, is not itself at all an easy task. But I shall show directly that at least 100,000 men would be required. Moreover, on these lines they would have to carry all their supplies with them. Think of that. All their supplies with them, unless they had established magazines at different points beforehand. Therefore, it would be a tremendous business really to carry the army itself down the railway, to say nothing of the delay which would arise in the transport across the Caspian. How many steamers or boats has Russia got there? A good many, I dare say. But what would they count for when you come to send an army of 40,000 with all the munitions of war? That is itself a great difficulty, but it is not the difficulty which they are immediately met with. Many writers seem to think that once the army had got to the end of the railway and were only a few marches from Herat or anywhere else, they would go up at once. But would they? Now, just consider. They have got to march, and they want transport. That is a grave matter. I speak feelingly on the subject, because I myself have been engaged in it. I once had to act virtually as a Chief Transport Officer, and I know what it is to raise 100,000 camels. We could do it in India; but could you do that sort of thing in Central Asia? Look at the country through which that railway passes from the Caspian Sea to Samarcand. Does it produce any vast number of camels? Is it a great camel-breeding country? Of course, it has many centuries ago produced, I dare say, a countless number of camels; but all that has greatly fallen off now, and I think it would be found, if you came to work it out, that comparatively few camels would be available. However, I do not doubt it would be done.

I have no doubt that by sweeping all the country from the Aral Sea downwards, you might get together 100,000 camels. Could Russia attempt an invasion with less than 100,000 camels? I say she could not. She must have 100,000 men. There must be an army corps to deliver the assault; there must be one in support, and there must be a reserve. I am sure if you put 40,000 men into line in the front of battle, everybody knows you must have double or treble that number in the rear, protecting your base, and with all the transport and supplies for them. Here is then a difficulty. I do not say it would not be overcome, but I contend that a lengthened preparation would be necessary; and if war moves suddenly, as it generally does in this nineteenth century, why, then Russia would not be anything like in time. The whole thing would be over in various parts of the world long before the Russian movement in this quarter was in serious motion. I submit that this is a cardinal difficulty in the matter which has never been adequately understood. I impress that particularly upon you, because it is of extreme importance in the general consideration of the case, and it would immensely hamper the movements of Russia. You say there would be a similar difficulty on our side. None whatever. I could, by holding up my little finger and my money bags, in any part of India, raise any number of thousands of cattle, 100,000 camels, and yet another, to say nothing of our enormous resources in transport of other kinds. Of course, we do not have very much to do with that, because we have railways on to our fighting point. Whereas at the southern line the Russians have 370 miles and at the upper 700 miles, over a very difficult and desert country.

Now, having made those general remarks on the subject of Russian movements, may I just ask your attention to the route Russia might take in the event of a possible advance? Many people say nowadays that she will take the northern route, that she must take the northern route, and that she is preparing for that. I cannot say I believe it, and I think you will not either when you come to consider the case. She would start either from Bokhara or Samarcand—it does not matter which—with her transport, to go to the Oxus, which is a good 350 miles. I admit that there are no very great hills or mountains to traverse, but still she would have to get her supplies. Then she would have to cross the Oxus, a broad river. I do not know how she would get boats for that. However, everything would come in time. Having crossed the river, she would get to Balkh, and from the Oxus through Balkh to the head of the Bamian Pass to the Indian Caucasus is another 200 miles; that makes 550. Then through the Bamian Pass down to Kabul there would be another 100—that is 650; and I dare say with little deviations in the route you might put it at about 700 miles of marching. To take 100,000 men such a route as that is something too tremendous, especially when you consider the dreadful character of the Indian Caucasus and the rugged ground of the route on to Kabul. And when she gets to Kabul she has to meet a British army, which would have a temporary railway ready from Peshawar, with its base there, and another army corps there

for its support. That would be the situation, and I believe under present circumstances it is impossible. I ask you to enquire of any military man—and there are many now who are intimately acquainted with this country—and they will tell you that it is practically impossible. Russia will never get there. Another thing is this, the railway to Tashkend has not improved that railway at all. All that railway has done is to improve Russian communication with Central Asia or the Khanates and Central Siberia. So we fall back at last upon the south-eastern route.

Now, some people have spoken of this as a bugbear which could never be seriously contemplated. Others have said it could be easily done. I do not go to either extreme. I say that it could be attempted, and I feel certain that a Russian commander, if he had the ability of our British officers—and I suppose he has—could manage it. But I believe it is a task of great difficulty and one that would take a large amount of time. In the first place, think, as I have explained to you, of the trouble he would have in getting his troops across the Caspian and then along the railway to Merv, and then by this new branch to the Herat frontier. Then he would have to get his supplies together, which I am sure would take two or three months to collect. I am certain that if I were to get, as Senior Transport Officer, or, putting myself out of the case, the same orders from the Russian Tsar which I got from the Viceroy of India, I should not do it under three months, getting all these camels together from these great distances. Well, supposing he got the supplies, then he would have to go to Herat. Whether Herat could be defended, or would be defended, no man can say. That would depend upon the temper of the Afghans at the time. There is no doubt that if the Afghans were in high spirits about it, which I doubt, that the place might be defended. The Government of India could send some first-rate engineers to show them how to repair the walls, some first-rate artillery to show them how to fire straight; and some first-rate practical officers to "keep their pecker up." I dare say by these means Russia might be kept dancing before Herat for some days, and perhaps for some weeks. Of course, it is very important to crown all the hills near Herat, which if once got at by the Russians would lead to the command of the city. But at the best this could not go on for very long. The Russians, being a civilised enemy, must take it, and I assume we could not send troops there so far from our base. Herat would fall, but it would fall after delay, and delay which would be convenient to us. So that Russia would get on by degrees and reach Kandahar. What would happen there would depend upon the British army, but I cannot doubt that the Russian army would be repulsed. If by any chance it forced that position, the Russian commander might go on towards the Goomal Pass, where he would meet another army corps, and then his rear would be threatened by another army corps which would be in support from Quetta—for the reserved army corps would come up at once. There would be thus an attacking Russian army corps with an army corps in reserve, but with three British army corps—the one at Kandahar, the one at Quetta, and

the one at the Goomal. The result of that would be that England would have to send an army corps to India. She would actually have to do that in any case if there was a war with Russia. It could be done, and without any difficulty. Our first army corps could go at once, and a second army corps would have to be formed in this country. It would be an expensive business, but I suppose we could defray the cost, and Russia afterwards would have to pay an indemnity either in money or in territory in China. Well, that would be the case as regards the south-western route.

But there is another possible danger, which is this. I have been arguing both these cases on the supposition that Russia having declared war must go for us straight away, that she cannot wait six months or a year. But supposing she tried the waiting game—and I have no doubt this is what they hope—they would in the first place send, if not an army corps, a certain body of troops to take Herat and occupy that position. Then they would send a force across the Indus to occupy Balkh, and so bring the Russian troops right up to the northern basis of the Indian Caucasus. These are the easy parts of Afghanistan, the prosperous and wealthy parts. Russia would then make herself comfortable in those quarters and make her preparations for the final advance against the British line. That is what is feared, and certainly if the war is to last for a year she could do that. Of course, we could not, I suppose, allow such a thing to happen, because of our power of assailing Russia in Europe. It is all very well for Russia to say that she will occupy those two advanced positions and that we cannot keep her out. That is quite true. We could not turn the Russians out, and, I suppose, the Afghans could not either. The Afghans would, of course, wait until they saw our side was victorious. They would remain as passive spectators, and would not help us, although they would be nominally our allies. If we repulsed the Russians they would go for the Russians like a knife. There is no other way of describing it. We could not turn Russia out of those two provinces. But there would be war all this time, and Russia in Europe would be suffering. If we succeeded by quick movement in entering the Black Sea, there would be a happy hunting-ground for the British Navy, and anyhow the Baltic would be entirely in the possession of our ships. We should be cruising about, and the thunder of the British cannon would be heard at St. Petersburg. I do not know what would be the effect on the revolutionary tendency of the Russian people. At any rate, her sea-borne commerce would be all sealed up, and some of her Chinese possessions taken from her. It is very doubtful if she could stand that pressure one year after another. In the meantime England is not hurt in the least. She has not been touched in India, not approached for hundreds of miles. Of course, England will never make peace with Russia until she evacuated Afghanistan, re-crossed the Oxus, and had gone back over the Herat frontier. There is still one consideration which I should like to mention before I conclude. Some people might say, How if Russia were to attempt both the northern and the southern lines at once by long preparation of transport and supplies?

Well, that would go hard with England; but it is not beyond the power of England even yet, because after all a Russian force advancing towards Kabul would be met by a British army corps there with a reserve one at Peshawar; the one which marched from Kandahar would be met by one there with a reserve at Quetta; and so the thing would be accomplished. But let me point out that a simultaneous invasion by both these routes is impossible, because of the climate. The northern route could not be passed in winter on account of the dreadful cold. It could of course only be passed, if at all, in summer. The southern route could be passed quite well in winter—that is the proper season—but in summer the burning heat would be too much, so that there must be an interval of six months between the attacks; and therefore I say they would never both be made, because one attack could be delivered, and if it failed I do not think the other would be attempted; and if unhappily it succeeded, which I cannot imagine, then the second one would not be needed. So you see it is quite certain they never will both be made at the same time, or about the same time.

I am now extremely obliged to you for the attention which you have been good enough to give. I can hardly imagine more important military problems that could be submitted to any expert audience. I am sorry I have not been able to make them more complete, but it is no good wearying you with details. I have pointed out the main points, and I desire to repeat that I have no wish to make a war-like or bellicose speech against Russia or against anybody. But I am bound to speak out in defence of my own country, and I do think that our patriotic interests have sometimes suffered from our not speaking out in time. Nor do I consider that I have given what may be called information to the enemy. I have certainly given him information, but it is exactly what I want him to know for his own benefit, that he may digest it and see how impossible it is for him to invade the Queen's Empire in India, so that he may not waste his time and his money and his thoughts and his resources upon impossible projects.

In conclusion, let me say that while in the nineteenth century discipline, organisation, training, science, are of much avail, yet behind and beyond all these there is the national spirit in the men. Now, think, my expert friends, how that spirit would rise and swell in the breast of every member of a British army corps at Kandahar or at Kabul waiting the Russian onslaught! The Russians would come, if it was the northern route, dreadfully worn out by their fatigues over the Indian Caucasus; if by the southern route, much exhausted by their marches amidst the drifting and driving sand. Each man on our side would be in the highest possible condition, full of spirits, in excellent health, in good climate, with everything found—the men would be just as well as if they were in Hyde Park. There would be a great difference in the physical condition, and still greater would be the difference in the moral state of the two armies. The Russians would be invaders, trying to take our country from us; our men would be defenders of their native Empire. Fancy the appeal to the men which might be made—"Why, men, these

Russians are coming to take your country from you! Give it to them hot!" And then think of the memories which would arise in the minds of our troops, in the minds of the Guards, the Highlanders, the Borderers, and the infantry, of the historic counties of England—Lancashire, Yorkshire, Kent, Devon, etc. Think, again, of the Lancers and the Hussars compared to the Russian Cossacks. Think of the memories which would come into the minds of such men, the memories of the victories gained at Waterloo and Salamanca, at Alma and Inkerman, at Blenheim and Oudenarde. Think of what the cavalry would be dreaming when they thought of their achievements—immense achievements—at Assaye in the Deccan, at Waterloo, at Moodki on the banks of the Sutlej. Why, their bosoms would swell and their pulses would beat high; and above them all would be our venerable Queen-Empress in England praying, "Oh, God of Battles, steel my soldiers' hearts!"

Major-General FREDERICK LANCE:—I should never have ventured to address this meeting had I not been able, as I hope, to give the opinions on one point of this lecture of two very distinguished officers, who I regret to say are not able to give their opinion, and whose voices will never more be heard amongst us. The lecturer referred to the Goomul Pass, and I gather from what he said that it was his opinion that it should be defended from the side of India. It was my privilege to travel with the late Sir Charles McGregor along that frontier in 1884, at the time when I believe his opinion had been asked by the Government upon the feasibility of carrying out some scheme such as was indicated by the lecturer. In those days I do not think the policy of India was what was called a "forward" one, and I know that Sir Charles McGregor devoted very great study and thought as well as personal observation, to solve this difficulty. One suggestion was a very large fort somewhere in the neighbourhood of the Goomul Pass, with a view of covering an army corps debouching on the plains of the Indus. After a very careful observation of the whole of that frontier, aided by the very large knowledge he had of the subject, Sir Charles McGregor came to the conclusion that such a scheme was absolutely unfeasible. I will not give the reasons further than saying that any force approaching from the other side had the choice of a great number of routes by which to come, and it was not at all necessary that they should go through the Goomul Pass. In later years, when the policy of India was much more forward, I had the opportunity of knowing the opinions on this subject of the late Sir James Brown, who was also Quarter-Master-General of India, as Sir Charles McGregor had been before him. Sir James Brown was, I think, the only officer able to get—or he was the first officer who succeeded in getting—a Viceroy of India and a Commander-in-Chief to meet together, with other authorities, at Dera Ismail Khan, to go thoroughly into the whole of this question and to formulate, if possible, a uniform and lasting policy for the Government of India on the subject of frontier defence. Sir James Brown's policy, as many here know, was one of communications, and so far, I think, he was able to commit the Government of India to carrying out a great deal of the policy that he advocated; but, at the same time, his policy of communications was merely a part of what he wished done, and it was his opinion that the most efficient way of protecting that part of the frontier was to establish a division on the other side of the Goomul Pass, about Khudadad and many places there, where troops could be placed with a railway at their backs, and where there are high hills on which British troops could be established, and so save the burning heat of those plains, and be fully mobilised and equipped ready to start at once, so that on occasion a division could be placed at Ghazui at a week's notice. It was Sir James Brown's opinion that such a course would at once bring over the Afghans entirely to our side, and that, by

doing so, we should show that we really meant business, as well as being first in the field.

Sir RICHARD TEMPLE:—With his lordship the Chairman's permission, there is just one little point I should like to mention which I omitted, and it is this. In the event of Russia coming down upon us by the northern route which I have described, it might be said, "Oh, she would get no end of transport from Badakshan," where the people are very hostile to the Afghans, and where there are plenty of the most beautiful ponies available in great numbers. Well, a commander advancing from Bokhara to Balkh would have Badakshan upwards of 200 miles on his left up in the hills. I do not know how he is going to get the ponies. He would not get them unless he sent men to fetch and drive them; and when, after great delay, he got them, I do not think such ponies would be of very great use for military transport. They might be used for light loads, but you cannot put a heavy load upon them. There is the question of pack-saddles, galling, and all that. I do not think any such ponies would be of use, and it would take a great deal of trouble to get them. If, however, the commander were to diverge into Badakshan in order to get these means of transport, he would be involved in some of the most tremendous mountains in the world. In reference to what has just fallen from my honourable and gallant friend, I quite admit that in the direction of Goomul there are several other passes, but the Goomul has always been considered the best, and was so esteemed by the many great commanders in the middle ages, and even later times. At all events, it is a good thing, I do not say to hold this pass with any force, but to have one or two forts which may be held, and which would make that pass not available for an enemy. By having an army corps at Darza Khan and a bridge across the railway, you would have a force available to meet the enemy whichever pass he comes up. He must come up somewhere in that direction. With regard to having, as I understand, a station up in the hills for European troops with the view of pouncing down upon Ghazui, I never heard that Ghazui was of very first-class importance, except that it is on the road between Kandahar and Kabul. The Russians are not coming to Ghazui, remember. Ghazui was of enormous importance when we went up from Kandahar to Kabul, or when Lord Roberts marched down from Kabul to Kandahar after the Embassy disaster; but for a Russian invasion it is not of any great importance. But apart from that, all these plans have this difficulty which I have already submitted to you, that it would involve our keeping a part of the hills belonging to these tribes, and would set the whole of the tribes along that extended frontier against us. That is the difficulty, and I submit it is a difficulty we ought not to lay ourselves open to unless we find we cannot help it.

The CHAIRMAN (Lord Methuen):—I am afraid no discussion is likely to be forthcoming, and I shall confine myself, as Chairman, simply to thanking the lecturer for the discourse that he has given to us. I will at the same time submit that it is a very good thing in this Institution that we should have a lecture given to us which is quite clear of being a technical or expert's lecture. I say so, because when a person occupying the high and independent position that Sir Richard Temple does, delivers a lecture here, I find that a very large audience is always ready to attend. I think, also, that for a person in Sir Richard Temple's position it is gratifying to him to be able to express his opinion on a subject which he knows so well here rather than in the House of Commons. It is an opinion which he may rest assured will be read far and wide by all the members who take in our JOURNAL. I will only make two short remarks before sitting down, regarding the subject mentioned in the lecture. I rather think, and I believe those who were in the Tirah campaign will agree with me, that it is not quite so easy a matter now to collect your transport in India as Sir Richard Temple affirms. There are, I believe, two difficulties. First of all, the animals are not forthcoming; and secondly, which is very important, it is extremely difficult to find in the same numbers the drivers that

we used formerly to get for these animals. I had hoped to hear Sir Richard Temple touch upon a railway up the Khyber Pass. So far, as an outsider, I will go, and no further. There seems to me to be no such great civiliser as a railway, and if we wish to have the Khyber perfectly in our possession and make one good shot forward, I most humbly beg to contend that we can do it in no better manner than by running a railway up to Lundi Kotal. With these few words, I thank the audience very much for the kind attention they have given to Sir Richard Temple, and I thank him most heartily on the part of the Institution for having addressed us as he has done, and thereby promoting the work of this Institution.

Sir RICHARD TEMPLE:—Before we part, may I be allowed to express to you my thanks for the very kind reception you have given me here. I understand that you are the most expert audience that could be addressed in all England upon this subject, and the fact of hardly anyone dissenting from or controverting the manifold propositions I have made makes me think that I must have been pretty correct. With regard to what the noble Chairman said about transport, I did not mean to say it was easy in India, but I did mean to say, and do mean to say, that it can be done; I will ask his lordship whether he meant camels or mules. Mules are notoriously difficult to get, but we should not attempt such transport in the event of our having to meet Russia. We should rely, I have no doubt, upon camels. You will find the breeding grounds of the Sind Desert and the Rajputana area the finest breeding grounds of camels in the world, and we have command of them. With regard to the railway through the Khyber, I quite admit this, at all events, the line ought at once to be made from Peshawar to Jumrood at the mouth of the Khyber, because that cuts off ten miles distance; and when you come to a military emergency every ten miles count. I certainly agree with his lordship that if you are occupying the Khyber Pass at all with military forces, you had better have a railway through, because it makes the thing complete. The Afridis will not be a bit more afraid of the railway than they will of the military posts, and they will rather think the railway looks as if we were going on towards Kabul, to which they have no sort of objection. Therefore I think the railway might be made, if the Khyber is to be held by British forces. It would be very good in time of peace. But the real point in the future battle—whenever it comes off at Kabul - is not the railway through the Khyber, but a railway carried on by a temporary line through Jellalabad up to Kabul itself. I thank you most heartily. I am sure it has been a great pleasure to prepare this address for your kind consideration; and I assure you further that although I cannot always give the source of my information, what I have said are sound facts, right up to date.

THE EVOLUTION OF VOLUNTEER POSITION ARTILLERY TO VOLUNTEER FIELD ARTILLERY.

By Captain G. NEAL, R.A., Adjutant 6th Lancashire Volunteer Artillery.

Friday, May 13th, 1898.

Major-General Sir JOHN C. ARDAGH, K.C.I.E., C.B.,
in the Chair.

PART I.

THE subject of Position Artillery has been almost done to death, as its training, mobilisation, organisation, and uses as a fighting power, have all been dealt with, both in this theatre and elsewhere; so that in treating such a subject a lecturer is bound, unless he is a born genius, to travel in some measure the road taken by others. Position Artillery is not a subject likely to interest the many, but now that the country is awake to the necessities of our Navy, and Regular Army (which should always be the first consideration) it may not be out of place to bring into prominence the possibilities of this force for improvement. I have endeavoured, as much as in me lies, to keep out of the beaten track; and I trust, should my paper fail to interest you, you will consider my difficulties and take the will for the deed.

In the first part I have dealt with the *equipment*, *organisation*, and *training* of Position Artillery as at present constituted. In the second, I offer some suggestions as to how the present Force could be improved, and made capable of fulfilling the *rôle* it is expected to play on mobilisation, and at what expense to the State. I have dealt mainly with the heavy Position Battery aspect, but I include all other Position Artillery working, as set forth. This paper is the outcome of five years' practical experience with a corps of Position Artillery of four batteries of 40-pounder R.B.L. guns. It is also the expression of my opinion of the possibilities of the Volunteer Position Artillery.

As you know, until about twelve years ago, with the exception of the mounted batteries of the Hon. Artillery Company and one or two other corps, Auxiliary Mobile Artillery was non-existent in England, or I should say, I suppose, Great Britain. The authorities about that time decided to issue a number of guns to certain Garrison Artillery corps, and call those corps in future "Position Artillery," thereby converting them into Mobile Artillery. At the same time certain grants were made to the

corps who accepted the charge of the guns, equipment, saddlery, etc., on condition that the following undertakings were carried out :—

I. The battery will be fully and efficiently horsed at least four times in each year, including the day of annual inspection.

II. The corps will undertake to produce, when required, the full complement of horses necessary for the service of a battery in the field.

III. The corps to provide for the safe custody of the guns, carriages, ammunition, harness, and stores, and for their protection from the weather in buildings certified as fit for the purpose.

IV. The whole equipment of the battery will be kept, at all times, in a proper state of cleanliness, and in readiness for service.

V. The guns are only to be taken out for drill purposes in the neighbourhood of the headquarters of the battery, or at regimental camps, or for practice at the range of the corps, or for attendance, duly authorised, at reviews and field days.

VI. Not less than the minimum establishment laid down must be maintained, and properly trained in the drills and exercises required.

VII. Corps not supplied with wagons from store will arrange locally for the supply of suitable transport to take their place.

VIII. Corps will undertake to maintain, in a serviceable condition, without expense to the public, all articles of harness and saddlery supplied by Government.

You will observe in these conditions there is no necessity for teaching the essential duties of a horse-equipped unit. Again, in the short time the horses are with the corps, on each of the turns-out, were the wish ever so strong, time does not admit of teaching those duties.

I do not think I can do better than quote the opinion of Colonel A. J. Dunnage, R.A. (Commanding Royal Artillery, North-Western District), delivered in a lecture in this Institution, as to the general training of Volunteer Position Artillery.

On pages 6, 7, and 9, Colonel Dunnage says on Training :—" Let us put the question to ourselves :—

" Have we as individuals connected with our corps done our best to prepare our units for the order 'March'?

" Let us think. Let us go into detail with regard to the training of a corps during 'peace-time'—I emphasise 'peace'-time, for it would be fatal to wait until we were wanted.

" There is quite a consensus of opinion on the part of modern artillerists that in the next great war conflicts between large masses of guns will be one of the chief features of the battle-field, and that victory will declare itself in favour of that side which, by careful training and organisation in time of peace, has best prepared its artillery for combined action under the direction of a single leader.

" Last, but of great importance, is our 'route march,' which has for

its chief object the training of the men and horses and the perfection of the mobility and marching power of the batteries—in short, the care of horses on the line of march.

"Volunteer Artillery is not, and never can be, 'field artillery' in the same sense as Royal Artillery field batteries, unless it is placed on an entirely different footing from what is now in force.

"The idea of a field battery ever being workmanlike and serviceable with only four mounted parades in the year is simply preposterous and absurd."

These words are fraught with responsibility. It is our duty to acknowledge our shortcomings.

Organisation must come first (later I will endeavour to show how we can best attain it). Training follows. It is generally admitted, I think, that our Volunteer N.C. officers and gunners are well trained and, on the whole, fairly reliable. I would that our knowledge of our duties as a horse-equipped unit were as good. How can we *train* or become anything *really mobile* on four turns-out per annum and a day's route march *once* in *three years*, which is all that the present allowances admit of?

I fully agree with the opinion of Colonel Dunnage, as regards the *impossibility* of making Field Artillery out of the present Position Artillery in four turns-out per annum; and go further, and say that we cannot even teach the less complicated duties of *mobile artillery* under these *limitations*. Our failure is due to the unsuitable class of equipment which we possess, and to the present inadequate allowances, conditions of service, etc. No one who has studied the question supposes that these short-comings can be overcome, *constituted* as we are at present.

For instance, many corps of Position Artillery in the kingdom have the whole of the gun and wagon horses led. The leaders, who are also their caretakers, lead one of the pair; the other horse is led by a Volunteer. The system of having civilian carters and men on foot to lead the horses is unsatisfactory. On mobilisation I do not suppose their regular drivers would go with them, in which case each battery, now worked on this system, would have to take over a number of horses with hardly a man knowing how to handle them, as by this system the men do not learn stable duties, in consequence of the habitual presence of the civilian carters. Can we be considered as *ready* when we still have to do *this?* Yet on mobilisation we require *all ranks trained and ready*. Should we wait till then to surmount such difficulties? No!

Unless the present system is altered, I fail to see how anything but chaos can result. The difficulties of the first few days with trained men and horses, accustomed to camping, are great; and as in the Regiment remounts are first trained, and then put on the picket lines, so in like manner facilities for this training should be insisted upon for Volunteer Position Artillery.

Is our heavy Position Artillery worth retaining?

Please do not consider what follows a record of personal effort, but simply the experience of, I have no doubt, all 40-pounder batteries. I mention it simply as an illustration.

In 1893, to place eight guns, which were standing a little distance off, in position at Altcar Battery, the best part of two whole days was spent; we had eight of our best carters and 16 of our best horses to do this work. In 1894 practically the same thing happened. In 1895 a contractor of the railway company, unused to moving these guns, left them in such a state that it took close on 300 men half a day to put them into a position on the platforms. I admit that Altcar is an exceptional place.

In 1896, at Deganwy, we practically laid down temporary platforms. Owing to the nature of the ground, very considerable trouble was experienced in working the guns even under these conditions.

In 1897 we fired with the trails resting on the turf. The difficulties were great. After a few rounds had been fired the trail and wheels sank, consequently the guns had to be continually shifted, which brought the average time taken to fire each round to 48 seconds

Now consider. In the event of an attempted invasion, we shall be pitted against an army supplied with the latest engines of war. To attempt defence with our present equipment to me would appear suicidal, whatever the spirit animating the defending force.

Again, from experience with heavy horses and dismounted drivers (or leaders) only 2½ miles per hour even on fairly level roads can be accomplished. (Infantry march more rapidly that that.) What our so-called Mobile Artillery would do in the neighbourhood of Caterham, or moving along the hilly Surrey roads, as at present worked, would be very little, and that little very slow, as anyone who has experienced the difficulties of getting a 40-pounder R.B.L. gun only felloe-deep in mud, or sand, into a position, either with or without horses, well knows. The futility of trying to do anything but crawl along under these circumstances is apparent.

Further, since the Mobilisation Home Defence Scheme has placed this service in a recognised position as a defensive force, the duties of which would be to take up a certain defined position, and there remain, and as "Forty-Pounders are unquestionably Fixed Batteries of Position," we know where we are.

Is the flame worth the candle? Is it worth while spending all this money for the hire of horses, year by year, with no higher object in view than to move 16 guns and wagons from the Drill Halls, Liverpool (6th L.V.A. case), to Edge Hill Station, and from Caterham Station to the "fixed position" on the Surrey Hills? If these heavy guns must be placed, would it not be better to adopt the system carried out in a fortress for the placing of its movable armament?

My answer therefore is, remove 40 and 20-pounder Batteries of Position from the list of Mobile Artillery. I do not think any gun of 4¼ tons can be considered mobile in a true sense as applied to artillery in the field. They are capable of being moved, certainly. On the other hand, no one would accuse a 40-pounder battery of activity.

The case against 40-pounder Batteries of Position generally may be summed up as follows:—

I. The gun is too heavy and unwieldy for Mobile Artillery.

II. It is out of date and incapable of being rapidly fired, and gives unreliable results over 2,000 yards.

III. In difficult ground it is impossible to work it with its detachment of nine men.

IV. Its weight necessitates slow and unwieldy horses which cannot be effectually restrained without special gear when encamped.

Sir Charles Dilke, in a speech delivered on the Estimates, stated that the Volunteers have neither Field Artillery nor field guns. Captain Campbell, R.A., in an able lecture recently delivered in this Institution, combatted this statement, pointing out that the Force does possess such armament, but although of an old type, it was good enough for the duty it would have to perform. I have no desire to be critical, but I put side by side the opinions of Captain Campbell and myself.

Captain Campbell:—

The fire power is good, and the guns would be able to aid the Royal Field Artillery in the duty they have to perform.

Decisive artillery fire would be at 2,700 to 3,800 yards; 40, 20, and 16-pounders could give this.

Captain Neal:—

The gun is unwieldy, incapable of being fired rapidly, difficult to work with its detachment on bad ground. Has little or no mobility.

In a country like England, so much broken up by hedges, plantations, etc., indirect fire at such ranges would have to be resorted to, 40 and 20-pounders have no means for this. Further, as the remaining velocity of the 40 and 20-pounder is so low at those ranges, they cannot be considered capable guns.

You will observe, therefore, how much we differ, although we have both had five years' experience.

It is admitted that the country is in want of more Field Artillery, and that it must be cheap. The authorities are contemplating the issue of a new gun, I believe. I would mend the present 40 and 20-pounder batteries first by giving them a more modern gun. The way, in my opinion, to effect the change economically is as I now set forth, which would give every man an opportunity of acquiring a knowledge of his duties prior to mobilisation.

But before proceeding further, I wish to say here and now that I do not in the slightest degree wish to reflect upon the officers, N.C. officers, or men of this service; quite the reverse, they have my unbounded admiration.

PART II.

In considering how the present Volunteer Position Artillery could be evolved into Field Artillery two points present themselves :—

First. Can the present Position Artillery be brought to a state of efficiency as Field Artillery?

Secondly. Will the change be an expensive experiment?

To the first question, five years ago I would have said decidedly "No." Now I am of opinion that the change is not impossible.

To the second question, I believe by management it would not be nearly so expensive as is generally supposed, and I will endeavour to show how the present demand for Field Artillery could be met from the Volunteer Position Artillery.

Let us briefly go through what Volunteer Position Artillery may be expected to perform on Mobilisation Home Defence, or when called out under para. 281, Volunteer Regulations, 1897, for actual military service, in case of actual or apprehended invasion.

The temporary loss of the command of the sea by the fleet is acknowledged. An enemy has landed an army 80,000 to 100,000 men, with between 300 and 400 guns. In all probability, these troops and guns have all been landed somewhere on the Kentish coast, not at a dock, or a pier, but by boats; horses, harness, guns, and stores. Under these circumstances, I take it, the artillery of the enemy would be only of a nature that could be dealt with in this manner; we conclude, therefore, we have no heavier artillery to contend with than Field Artillery. But we may expect to have pitted against us thoroughly trained infantry and cavalry, and modern artillery with an effective projectile, etc.; possibly gun for gun to what we now possess in the Regiment.

This briefly is the Artillery aspect.

Now let us take stock of our Royal and Volunteer Mobile Artillery.

In the 1st, 2nd, and 3rd Army Corps we have in England, or had until the Brigade Division went to South Africa :—

10 R.H.A. batteries;

45 field batteries, 2 of which are armed with 5-inch howitzers.

The Volunteer Mobile Artillery in England consists of :—

79 batteries, or 316 guns, 120 of which are heavy guns. The home establishment have only eight 5-inch howitzers to 55 batteries or 330 guns.

The Indian Army has 3 heavy batteries consisting of 18 heavy guns and howitzers to 52 batteries or 312 guns, whereas the Volunteer Mobile Artillery has 120 heavy guns to 196 light guns, which is certainly not at all in proportion to the Royal Artillery, either at home or abroad.

Is this proportion of heavy guns necessary, although it follows that the defensive force (being at home, so to speak) should have a proportion of heavy artillery?

My idea therefore is that all (or a proportion, should they all offer to accept) of the present Position Artillery unable to comply with such

conditions as I hereafter name should form the "Fixed Position or Heavy Artillery." I do not think horses would be needed, their removal from mounted duties following.

The batteries able to accept the Field Artillery to be armed with Field Guns.

The Field Artillery Drill-Book tells us of the following duties of Artillery in the Field:—

1. Artillery in the Attack.
2. ,, ,, Defence.
3. ,, ,, Pursuit.
4. ,, ,, Retreat.
5. The movements needed in front of the enemy will be few and simple.
6. Precision and rapidity in executing all movements and formations is necessary.
7. Practice in forming line to the front, from column, and making long and rapid advance in line on various kinds of ground ending by occupying a position for action from which every gun could at once open fire upon the indicated position of the enemy, as the training for Artillery in the field; it is apparent that the days of complicated manœuvres is past.

Our training therefore should be directed to the attainment of that end, and the question is: Can Volunteers be trained as drivers to do this work?

Before sketching how Volunteer Artillery could be trained in these duties, I wish to say why I think the conversion a possibility, and what has induced me to form that opinion. I am sufficiently old to remember that the general opinion of a man who joined the Volunteers was, that he had a "Bee in his bonnet." This was partly due, I think, to the extravagant way their doings were published and praised in the Press. I have a distinct recollection that the hero of a regiment, at an Easter Monday sham-fight and review, in which the battery I was serving in participated, was a man clothed for the most part in a newspaper. I think we may fairly say those days and ways of Volunteering have died out.

I therefore in support of that view draw another picture. I have no wish to appear egotistical, and hope you will absolve me from that. I only bring the corps in which I am serving into this as I cannot avoid it.

Well, five years ago we started from the *raw*, with officers, staff-sergeants, farriers, and trumpeters. My first impressions I will not divulge. The class of men generally to whom the mounted duties fell were advanced in life, one over 50 and several over 40 years of age. In spite of this, the at first apparently insurmountable difficulties, as far as they are concerned, have vanished, attributable in a great degree to the splendid *esprit de corps* prevalent, which, I think, obtains much more in the Volunteers than in the Army now. If from that material such good results were produced, is it too much to expect better results from younger men who would become the drivers of the new batteries?

We take it the training of non-commissioned officers and men to a great extent is a matter of application, local facilities for which in many cases already exist. As regards the officers, we must go to the root of the matter. Is the military education of our Volunteer Artillery officers sufficiently comprehensive for the proposed added responsibilities? I do not pretend to say it is, but I do think they are equally capable of learning the less complicated duties of Field Artillery, as their brother Garrison Artillery officers are of the duties of the Garrison Artillery service, with its many complicated mountings, tables, etc., etc.

Taking the senior ranks, it would be necessary that the senior officers, having learned the duties taught to a great extent, when junior officers, by their attachment to a battery of Field Artillery, should be specially considered. The officers themselves are daily becoming more alive to their position and responsibility (although there are still some of the old school who remain). Perhaps a digression at this point is pardonable.

The Liverpool Volunteer Artillery world has been much disturbed of late, and naturally at such a time many points and aspects come under discussion. Incidentally, I was informed that an officer of the old school (by no means a rich man) had, owing to a conversation, gone through his books, and added up what he had personally given in cash, during some thirty years he had been connected with the Volunteer Artillery; he found that, had he invested the money so spent, it would at this moment represent an income of £80 per annum. I do not think this is a solitary case, I dare say you all know of other cases, of equal patriotism and generosity. I have thought it well for us soldiers to be reminded of what is being done for love of Queen and the good of our country, even by men with a "Bee in their bonnet." Reverting to the training of the senior officers,—if the authorities could allow these officers to proceed for instruction, in their particular line of duty to Okehampton and Aldershot the Service would be greatly benefited, the junior ranks being instructed as at present. There is no doubt the majority of the officers of the Volunteer Position Artillery are desirous of the Force being made what it ought to be—a Force able to support the Royal Field Artillery. What an opportunity here exists to supply our admitted deficiency in Field Artillery, and at the same time do away with the reproach of possessing under-manned corps of doubtful utility!

The following conditions, I think, should govern the change, as from environment some of the batteries would be unable to fulfil any more stringent obligations than they do now. The fittest only would survive.

Experience has shown that the want of the following has been a great hindrance to the efficient working of batteries of position:—

a. A good drill ground or park, near headquarters.
b. A riding school.
c. A sufficient space at headquarters to parade the batteries.
d. Accommodation sufficient to receive the horses, and harness them prior to hooking on.
e. Sufficient harness-room accommodation,

Unless it could be shown that these conditions could be fairly met, I do not think conversion should be made, so I do not advocate a wholesale conversion.

The question may be asked, What would you do with the present light batteries unable to fulfil these conditions?

Make them "Fixed Position Artillery" working with their present establishment, and give them heavy guns, but not to be horsed. Should this give a preponderance of Heavy Artillery, make the deficiency up from the present heavy Position Artillery. As I do not ask for any additional capitation for the dismounted men, their instruction as gunners could be continued as at present; and as in many corps the authorised establishment is not maintained, little or no real inconvenience would be experienced, I think; exceptional cases I have no doubt would receive exceptional treatment.

We must next consider the method and probable cost of training a battery of Volunteer Field Artillery on these lines, and what changes and modifications might, *without loss of efficiency*, be effected.

It is admitted that the present establishment for a 4-gun battery (160 men) is too large. I would reduce it. (This would be a loss in quantity, but I am convinced would be a gain in quality.) The point that presents itself to me is, Do we want 160 men for a 4-gun battery? The Royal Artillery do not. Why should the Volunteer Position Artillery? What is required is a *well-trained* and *well-disciplined* unit, not a grant-earning quantity.

Then I would vary the present system of earning the capitation and other grants, and I would also modify the quantity of gun and small-arm ammunition. The savings in each instance to be used in obtaining more experience in mounted duties.

As I before stated, the present establishment of the battery is too large; I think the following should be the establishment of a 4-Gun Volunteer Field Battery:—

5	Officers
23[1]	N.C. officers and trumpeters
30	Drivers
56	Gunners
2	Collarmakers
1	Wheeler
117	

My reason for mounting so many N.C. officers and trumpeters is a healthy one, I think, although I would not have them all mounted on parade at the same time, but clothed as such and trained in riding drill, etc., to be able, so to speak, to have a second string to the battery bow, which is necessary. For each of the N.C. officers and men on the mounted establishment, an allowance per head to be granted.

[1] 1 Batty.-Sergt.-Major, 1 Batty.-Qr.-Mr.-Sergt., 7 Sergeants, 2 Shoeing-smiths, 5 Corporals, 5 Bombardiers, 2 Trumpeters—total 23.

Trained Volunteer officers and non-commissioned officers, according to my own experience, may be kept up to a *good* state of efficiency with 10 lessons in the school and park per year. I would allow therefore for each of these 23 men £2 10s. 0d.: the actual cost of these lessons equals £57 10s. 0d. per battery. The ride in each instance to last from 1½ to 2 hours, and to consist of instruction in the single ride, sword drill, jumping, and post practice.

I said previously, leave the gunners as they are; the foregoing system would train the officers, non-commissioned officers, shoeing-smiths, trumpeters, etc.

The training of the drivers is, I must admit, the hardest part of the suggested change. I fully recognise the difficulties. For instance, how hard it will be to train men to take calmly the upsetting of a gun, and the hundred and one dangerous-looking accidents Field Artillery are continually liable to that are not provided for in the Drill-Book. But by hard work these difficulties will be overcome. Providence looks after children, drunken men, and Field Artillery drivers—I dare say Volunteer Field Artillery drivers will also be added. It is almost incredible the very few serious accidents that happen to drivers, even when the smash-up looks most complete. The training of a driver would necessarily be different from that of a non-commissioned officer, and should consist of riding drill, driving, care and grooming of horses, and elementary stable management.

We must take something as a basis.

I would therefore give the driver four riding drills, and six driving drills with a pair of horses, as Spring drills (in the case of newly-enrolled members riding drills may be substituted for driving drills as necessary). As regards instruction in harnessing, grooming, and turning out, this could be taught at night, and should be continuous; three of the Spring driving drills should be devoted to this alone, and should be working, and not show, parades. The extra allowance for the 30 drivers on this basis would, at £4 per driver, amount to £120; total for non-commissioned officers and drivers, £177 10s. 0d. The present allowance of £112 per annum is sufficient for the four turns-out; assuming, therefore, that the number of battery drills should not be less than twelve per annum, an increase of £224 per battery would be required. The turns-out are calculated on the present basis of payment, but I have no doubt that the contractor would, as a matter of business, give better terms were he to see his way to earning a larger sum, and would lay himself out to provide more suitable horses than are now supplied.

We now come to the coping-stone of training: the camp or marching column.

Myself, I incline to make this an annual exercise, varying it with a rail journey to camp, and a march home, or the year the march is not undertaken a test mobilisation with camp equipment, stores, and horses, lasting, at least, three days, at the point of assembly, to take place instead. The whole of the machinery for mobilisation tested as far as possible, the expenses being met from the marching allowances. This would entail

an additional grant of £232 16s. 0d. being made per battery, as it is estimated that the cost would exceed, when in camp or on the march, the ordinary expenditure for each of the ten mounted men £1 4s. 0d., and for each of the twenty-two drivers with pairs of horses £2 8s. 0d. Total, £64 16s. 0d. over the allowance for six turns-out—£168. Total, £232 16s. 0d., which would give six days' training in camp or on the march. This march might take place less frequently than annually; of that the C. O. to be the judge; but it should certainly be not less frequent than now, once in three years.

The next question is: Are the present terms of service sufficiently binding to withstand the further disciplinary strain a higher standard of efficiency would cause?

You are all aware in every corps there is a *percentage of peacocks. That percentage would* certainly *never* become *field artillerymen.* I have dealt with them in the new establishment. The 70 per cent. remaining I have no doubt about, they soldier for the love of it. The only change needed with them would be to raise the number of drills that qualify for efficiency for all mounted N.C. officers and men, and to require longer notice of discharge than that at present in operation (certainly six months).

To put it briefly: If you sincerely wish to become really good Volunteer Field Artillery, with a fair knowledge of the duties laid down in the F.A.D. 1896, nothing less than this will suffice, viz.:—

Mounted N.C. officers and drivers, 22 mounted parades, and six days' marching, besides a proportion of other necessary parades. From the eager way mounted positions are sought after, and the very excellent way the difficulties are surmounted, as years go by the Arm would unfold and become a reliable service, I believe.

As we contemplate reducing the establishment by 43 men, the saving that would be effected would amount to £124 per battery for capitation, proficiency, equipment, greatcoat, and camp allowances. The amount of saving under travelling allowances, in consequence of the battery marching to annual practice, for which travelling allowance would not be claimed, would be about £25 per battery. (The year the march is not undertaken, the present mileage allowance to be drawn.)

The present allowance per battery of gun ammunition is 200 rounds (50 of which are blank), and 20 rounds of small-arm ball.

Ten rounds of small-arm blank per man is valued at:—

Gun ammunition - - - - -	£111	5	2
Small-arm ball - - - - -	13	8	5
„ blank - - - - -	2	10	4
	£127	3	11

Very few batteries expend their full allowance of ammunition. If a battery drew 170 rounds of gun ammunition (50 blank and the same proportion of small-arm ball, and blank ammunition for the reduced numbers), the saving effected would be about £26 10s. 0d., which would be further increased by £24 12s. 6d. the difference in cost of 40-pounder

ammunition over that of field artillery ammunition. The values are as follows:—

40-pounder common shell complete round	£0	13	10¼
40-pounder shrapnel shell do.	1	4	0¼
15-pounder common shell do.	0	11	10⅜
15-pounder shrapnel shell do.	0	17	9⅜

The difference in value between the ammunition of the two guns is 2s. ¼d. and 5s. 11d. respectively.

To sum up, for savings on—

1. Allowances by reduced establishment	£124	0	0
2. Ammunition	26	10	0
3. Travelling	25	0	0
	£175	10	0
Should 15-pounder guns be issued, the saving on ammunition as above would be	24	12	6
	£200	2	6

Additional expenses—

1. Mounted allowance for N.C. officers and drivers	£177	10	0
2. Battery drill allowances	224	0	0
3. Additional marching column, six days	232	16	0
	£634	6	0

Should 15-pounder guns be issued, two ammunition wagons would not be required, the 15-pounder gun carriage carries 46 rounds, the balance 16 rounds to be carried as now in ammunition and store wagon, this would cause a saving of—

4 drivers for 2 wagons mounted capitation at £4	£16	0	0			
16 horses, 12 turns-out battery drill at 10s.	96	0	0			
4 drivers with pairs of horses at 28s., marching column allowance	9	12	0			
				121	12	0
				512	14	0
Deduct total savings				200	2	6
Balance				£312	11	6

The balance £312 11s. 6d. provides for all ranks, except officers, whom I have not included for various reasons. I favour a lump sum for this service being granted to each battery, say £20.

A battery of Position Artillery of 160 officers and men costs the State roughly for its upkeep, including ammunition and grants, £705. 1. Efficients to Army. 2. Special subject allowances for officers excluded.

My idea then is, maintain the present principle of capitation for efficiency, proficiency, equipment, greatcoat, and camp allowances, and make additional money allowances for mounted men. It will be seen that a Volunteer Field Battery of 15-pounder guns would, worked on these lines, costs roughly £1,039 per annum, or £330 more than a battery of Position Artillery now does.

Before concluding these remarks, I feel a few words on the way in which the Volunteer Regulations Act, as regards Position Batteries, would not be out of place. I mean this: in all our drill and training the unit is the battery; that being the case, all issues should be so made. Let me give an example or two to explain my meaning:—

Take the issue of arms under the Regulations. Every gunner must have a carbine and sword; the gunners in the detachments could not possibly use them; these arms lie at the headquarters year after year, are a great expense, and under the conditions obtaining for twelve years could never be used. I hope the issue of the magazine carbine (which appears about to be made) will be less prodigal.

Again, the unit for a marching column is the battery, yet nothing is allowed to the officers and battery staff, who attend a marching column and camp in the same year, although it is allowed to the brigade staff. I do not raise these points in a factious spirit, but simply to show that these Regulations require modification, as I hold, if the battery is to be considered the unit, the issues of stores, camp equipments, etc., should be made on battery lines.

In advocating a reduction of the battery establishment, I wish it to be clearly understood that for financial reasons to reduce the numbers and pay one's way would be an impossibility, as it is very hard to make ends meet now; but to improve the unit it would be better to lose a percentage of members who simply do the minimum number of drills to enable them to wear Her Majesty's uniform, provided there was no loss financially. This percentage admittedly hampers instruction. Their absence would admit of more attention being paid by the instructors to the advancement of those men who have the credit of the Service so much at heart.

It is expected the authorities would insist on a different standard of efficiency than that now obtaining, and rightly too. By the signs of the times there would be no objection to this on the part of the men; I have no hesitation in saying that the men who now willingly devote from 60 to 180 hours during the year to their Volunteer duties would have little to fear on the score of stringency from any condition that might be imposed. I am fully aware of the strides some corps of Position Artillery, armed with lighter guns than the 40-pounder R.B.L., have made, and at what expense and trouble this has been effected. I therefore point to them as instances of what may be expected, should the authorities determine to further improve the Position Artillery service.

The announcement that the authorities had decided to issue modern guns to the Volunteer Artillery is opportune, and which when received will be heartily appreciated by all ranks. The almost unanimous desire

of the Force is to evolve. Now is the time to help the Force forward, and it appears to me the way to do this is by changing its organisation, conditions of service, and weapons, and granting further financial assistance; and, as the sparks fly upwards, the Force will rise to the new conditions, so that when the testing time comes we may be found Ready, aye Ready!

Colonel HERBERT J. ROBINSON (6th Lancashire Volunteer Artillery):—As the officer commanding the 6th Lancashire Volunteer Artillery, in which Captain Neal has so ably served for the last five years, I have naturally nothing very novel to say; having worked with him, his views are very much my views. I consider that the material of the Position Artillery is excellent, and is capable of being developed very much more than it is at present. The men are willing, but what they want is organisation, and more financial assistance. I am afraid this is the old cry. The principle of the capitation grant as applied to Position Artillery is, in my opinion, bad; for instance, my establishment of all ranks is 725. I do not want 725 for four batteries, but I must recruit to the last man, or lose his grant, and without his grant I cannot carry on the corps. We are rather particular, our standard being 5 feet 6 inches, and every man is medically examined; but still we have some men whom we would rather not have, and we should not keep these men if it were not for the financial loss which would occur to us if we got rid of them. Consequently, I think the payment for Position Artillery should be on a different system. We are not organised, and we have no definite instruction as to what we are to do. We are a sort of hybrid between a field battery and an infantry battalion. As Captain Neal said, we have 600 carbines. What do four Position or Field batteries want with 600 carbines? They want a few for guard purposes, and that is all. They are a cost to us which might with advantage be spent in another way. Then we want larger grant and facilities for what I may call field practice, that is to say, practice when the batteries are horsed. I think I may say without fear of contradiction that the gunnery itself of the Volunteer Position Artillery is very fairly good, but its knowledge of duties when the horses are with the battery is of a very poor character indeed, and that not from any want of zeal on the part of the men, but from the want of facilities to learn that part of their duty. I also think that it would be of great advantage if we could be allowed, and had funds enough, to take horses with us to camp. For instance, two years ago we were encamped at Deganwy at the same time that the Mersey Brigade were at Conway close by. We had two batteries of 40-pounders with us, and I should have very much liked to have taken part in the field-days of the brigade; but having no horses, and no funds to hire them, we simply had to sit still at the camp and do nothing. It would have been of the greatest advantage to us, if we had had horses there, to have taken part with the other troops in those field exercises, and our co-operation would have been valued by the infantry brigade. Perhaps this is rather a digression; but if we are going to do more, and require more from the Volunteer forces, I think officers and men require a little more encouragement. I have a strong opinion that while in camp officers should receive the pay of their rank. At present they work from morning to night and their reward is that they are fined about £5 apiece for their pains, the amount of their personal expenses. It is not, I think, that they care so much about the amount, but they feel that they are giving the whole of their time, and that they should be recognised as doing work and duty. If the Volunteer Position Artillery is "evolved," as Captain Neal says, and improved, I foresee a little difficulty with the officers, if it means a large sacrifice of time. My own corps is officered by men engaged in commercial pursuits. In a large city like Liverpool there are a large number of such men in very good positions, but their positions are due to their commercial work, and they cannot afford to sacrifice a great deal of their time. They are willing to work in the evenings or on Saturday

afternoons, and for a week annually in camp, and to do all they can; but I fear if much more stress is put upon them that class of officer will not be available, and it is a class I should be very sorry to see pressed out of the Volunteer force. It is a class that has experience in matters of business which are certainly useful even from a military point of view. It is one that takes great interest in the work, and I think I may instance to show it that eighteen of my officers have passed the artillery examination. At all events, I hope and trust that the Volunteer Position Artillery will be improved, and I can say, as one of its members, that the officers and men, as far as I know them, will do their very best to fulfil any new or more stringent conditions that may be put upon them if it be within their power to do so.

Captain WALTER T. SOUTHAM (1st Shropshire and Staffordshire Volunteer Artillery):—I am sure I am only expressing the opinion of a very large number of Volunteer Artillery officers, especially those who have Position batteries, and who are not able to be present here to-day, in thanking Captain Neal for his kindness in bringing this matter forward. Personally I do not altogether agree with all his statements. At the beginning he says it is perfectly impossible to make a reliable Field Artillery with the present organisation and present system under which we work, and I think it would be far better if we recognised that at once and attempted a better service of a modified Militia form. I think that even with the Volunteer Position batteries as at present constituted we could get a certain number of men who would, with increased training in mounted work, make the Field batteries fairly reliable. Still we have the difficulty that we have absolutely no control, and in time of need no reliable force. If these batteries, or at least some of them, were formed under some modified Militia system of service—it may not be precisely the same, in fact it would not be advisable or necessary for it to be the same as the Militia Artillery or the Militia Infantry as at present constituted—we should then have a very much more reliable, useful, and workable force. Captain Neal quotes from Colonel Dunnage's lecture here that:—"Volunteer Artillery is not, and never can be, 'field artillery' in the same sense as Royal Artillery field batteries, unless it is placed on an entirely different footing from what is now in force. The idea of a field battery ever being workmanlike and serviceable with only four mounted parades in the year is simply preposterous and absurd." Again he says further on:—"No one who has studied the question supposes that these shortcomings can be overcome, *constituted* as we are at present." Why not then give up the idea at once and convert them into Militia Field Artillery, and thus obtain some adequate return for the money expended? I think it would make very little difference, at any rate in most of the districts, from a recruiting point of view. Take, for instance, the principal country towns. It would make no difference to the officers, most of whom are men who are able to devote the necessary time, and of course keeping horses of their own, are invariably qualified as horsemen. As far as the rank and file are concerned, taking the country towns where there are a certain number of manufactories, and where most of the men have probably been reared and brought up in the country and then come to the town as mechanics, they all of them have a certain knowledge of horses, and those men would make excellent gunners, and would have no difficulty in joining a modified Militia such as I suggest. With regard to the question of horses, I brought forward at the lecture Colonel Dunnage gave here, some twelve months ago, a suggestion for horsing the Volunteer batteries, that would be equally or even more applicable were these batteries re-organised as Militia. That is, instead of selling the cast horses of the Royal Artillery, as is now done—and I believe I am right in saying that there are a large number of horses at present retained over the limit of age in the Royal Artillery, which, although perfectly fit for service at home, would not be so for service abroad—I would cast those horses at a little earlier age, and instead of being sold to the dealers for a very small amount, give them, free of cost for the sake of their

keep, to small traders in certain localities, where Volunteer or Militia batteries were formed, with the proviso that they were kept in good condition and available for use when required by the officer commanding the brigade or battery at certain definite times in the year. The cost to the Government would be practically nil, and we should have properly trained and serviceable horses; for as everyone knows, the training of horses is of as great importance as the training of men. By that means we should be able, even as Volunteers, to have a very much larger number of mounted parades, and they would be very much more serviceable. Of course then would come the question of supervision, for these horses would have to be periodically examined by a qualified veterinary surgeon, and that gentleman would of course naturally be the veterinary officer of the battery. If you would allow me for one moment, I should like to digress on a point which has just come to the front, of what is termed the outfit allowance to Volunteer officers. That, up to only a few days ago, was only available for combatant officers; now, by a recent Army Order, it is made applicable to medical officers as well. I should like to suggest that, as veterinary officers are often not quite so well blessed with this world's goods as their brethren of the medical profession, and as they are far more difficult to obtain, have harder work to do, and are absolute'y necessary in any mounted branch of the Service, particularly in the case of Volunteer mounted batteries, they should be included, and have that grant given to them.

A MEMBER :—And quarter-masters.

Captain WALTER T. SOUTHAM:—If it is applicable to one officer, I think it should undoubtedly be given to all. Then to revert to our subject. I quite agree with Captain Neal in the reduction of the establishment. The present establishment of 160 to a 4-gun battery is utterly absurd. It was only arrived at by the conversion of two Garrison batteries into one Position. When the Position guns were first given to Volunteer artillery, any C.O. who liked could have a gun or two, or four, as he chose. They were all Garrison batteries of a maximum strength of 80. At the first outset they had to qualify, and the officers had to pass in the drills of all the guns on charge, whether Position or Garrison. In a very short time this was found impracticable, and was changed to district Position batteries and Garrison companies, but they still retained the old establishment of a maximum of 80 and a minimum of 60 for both branches; then as the application became larger for field guns, certain corps were changed into Position corps of four batteries, two of the then existing batteries of the Garrison being made into one field, the establishment and organisation remaining exactly the same, officers, non-commissioned officers, and gunners, with a result that is absolutely absurd and impracticable We have six sergeants where we have not any employment for them, and a ve y large number of men we cannot possibly utilise. It is optional whether we enroll drivers or all gunners. In practice, with the Volunteer force as at present constituted, it works fairly well, because, as I think every officer will admit, the Volunteer force is made up of about 25 per cent. or, perhaps, 33 per cent. of men that are really good. They are gunners, as Captain Neal says, for the very love of it. They are born soldiers. Then we have another third, in my opinion—and I have had some very considerable experience among all branches of the force—who might, with a little extra training, be made useful. Then we have another third of utterly useless men, all of whom have to be retained for the sake of the capitation grant. As we of the 16-pounder batteries can only at the best employ one-third of the men at a time, we invariably get and naturally take the first-named, and so are able to turn out a fair battery. I therefore agree with Captain Neal's suggestion that we might very well reduce the number; but I must say I should like to see in all further issues of guns, that six with at least three ammunition and one store wagon be allotted to each battery instead of four as at present; it is much easier to work a 6-gun battery than a 4, and when one comes to fire at a moving target where you have one section as ranging section, very little effect

can be expected or obtained with only two guns left for section fire; this would, of course, slightly alter the necessary establishment. I do not know how Captain Neal arrives at his figures per battery, they are not quite the same as I would personally allot them; however, I am sure all will agree that anything is better than the present organisation, or rather want of organisation. At the same time I am personally convinced that the only way to obtain really reliable Field Artillery batteries is to adopt some modified form of Militia service.

Captain W. ADAMS NICHOLSON, R.A. (Adjutant 3rd Kent Volunteer Artillery):—I should like to make a few remarks, Sir, on the lecture we have heard, because I take rather an interest in the subject. Taking Part II. of the lecture, where it speaks about the training of Auxiliary Field Artillery, the proposal to me seems to rest on two points, viz., whether this arm should be trained as Volunteers or as a modified form of Militia. I do not intend to touch on the modified form of Militia at all, because we are distinctly on the other line this afternoon. The efficient training of officers and drivers is the greatest difficulty to be overcome. As regards the officers, there is no doubt that there are a certain number of them who can afford the time for extra training. The only thing is, you cannot get those officers everywhere. But you can get them. I have asked several officers, and had distinct replies that not only could they turn up for the necessary number of drills, but could attend at least a week or ten days in camp. Unless work of this kind can be accomplished, and a large percentage of attendance in camp made compulsory, the whole proposal as Field Artillery falls to the ground. Either the thing has to be done properly or not at all. With regard to the men, there should be no difficulty in getting them, if a sound and useful training is offered as an inducement. Of course, I need not say that where you put the two lines together, having the Volunteers in the form of a modified Militia, it would be more easily done. If the driver is to be efficient he must undergo a mild form of training all the year round. To emphasise this point, I may just mention that Captain Wray said in a paper on this subject that the horses might be kept by Government for a complete brigade division. I think that is very sound, but where I differ from him is in saying that the horses should be handed over to the service batteries when the summer camps of the various corps were over. I think they would eat their heads off in the winter. Why not split them up into sections, and send one section to those corps intended as Field Artillery? Then there would be a means of continuous training for the drivers and non-commissioned officers provided. You cannot train your own non-commissioned officers to ride after a certain age, therefore they should commence when they are bombardiers. Once a man gets over 30 he cannot be taught properly, and by having these horses at headquarters it would cost the Government no more whether they were kept at the Volunteer headquarters or in Regular barracks, and the men would be able to train all the year round. Those horses could be brought together in the summer, and the corps would be able to go to camp in succession, and ride those horses. The point I wish strongly to remark upon is that in addition to having those horses when in camp, they would have others registered which they would use on mobilisation, and which they would turn out with at least six times before proceeding to camp. With regard to the reduction of the establishment of gunners, I am afraid I do not altogether approve of it; 50 gunners is rather small, and then unless you fix and tie the gunners down that they must attend parade, you would rarely have sufficient numbers for training in fire discipline. The lecturer, in discussing the training of mounted non-commissioned officers, speaks of ten lessons of one-and-a-half or two hours. I think fifteen lessons of an hour would be better. I was looking on the other night at a ride of Volunteer drivers where they had an hour of it, bucketting around as hard as they could, and stood it well; but I do not think they could have stood an hour-and-a-half with comfort, and I do not think the horses could have stood it either. I am very much against reducing gun ammunition. I think to sacrifice shooting for the expenses connected

with driving would be a great mistake. The shooting power is now, I believe, improving, and a decrease in gun ammunition would not tend to maintain so important an advance. In fact, rather than do that, I think money would be well spent in giving gunners an opportunity of attending gun practice, at least half-a-dozen times, if they choose to go. In most of the corps they do go three or four times, and that is why, when the balance-sheet is made up, there is a deficiency. As regards the doing away with ammunition wagons, I am also very much opposed to that, because I do not see how the guns are to be kept supplied with ammunition if the wagons are not there. Not only that, but there are two ammunition wagons with the battery at present, and I am rather inclined to think there ought to be four, because there is a time when the wagons might be both empty, and if the limbers were not near there would be no ammunition at the guns at all. Of course, the wagons of an ammunition column might come to the rescue, but I think there is a defect which rather wants consideration. The next thing I should like to mention is with reference to finance. I should just like to say a word or two on that subject, though after all it is not a thing which concerns me very much. If we consider the allowances made to Volunteer Artillery from an all-round point of view, we arrive at the conclusion that Volunteers are very well paid. We see that the gunner gets 35s. grant, and the sergeant gets 35s. and a grant of £2 10s., which would really pay for riding lessons. The drivers, unfortunately, only get the 35s. grant, which doesn't pay for their mounted kit, leaving driving lessons out of it altogether. As regards the turning out of batteries horsed, my experience is that with 6-horsed teams, drivers, outriders, and everything complete, the cost is covered by the £25 for each turn-out. But where the money vanishes in Volunteer corps is in the salaries, and emoluments, for which there is no regulation allowance whatever. In addition to that, there is a tremendous amount of fatigue work, which must of necessity, be connected with corps, for which no allowance whatever is made. That is what runs away with a great part of the funds. Quartermasters, in most cases, have to be paid; if you have not a band you will not get recruits; and if you want a band, you must have a bandmaster; and if you have a bandmaster you have to pay him, and pay him well. There are various other little things of that kind, and they all have to be met out of the little surplus made on each gunner from the 35s. grant. Nothing whatever is got for the mounted men, because their money if they are properly trained is spent on their training. You save on the gunner, by cutting his expenses down to the utmost; and what is the result? The men, instead of being really properly clothed for service, are not properly clothed. If you clothe and equip the men properly, then you cannot pay these other expenses. The end of it is, that the equipment is at a loss, and is not properly maintained. I think this would be felt on mobilisation, and unfortunately is a failing which might lie hidden in time of peace. Fatigue work at the present day in Volunteer regiments is not usually done without being paid for. I do not know what it was in the past, but it has to be paid for now. The last point I should like to refer to is, where Captain Neal says that an increase of £330 would make a battery of auxiliary Field Artillery. I am sorry to quite disagree with him. With the extra turns-out he is going to put in, I do not see how it can be done. That takes £200 alone. Then in addition to that, if he trains the drivers, £100 would not go so very far. In fact, in my humble opinion, an extra £300 per battery would much improve the present standard of training, but it would not make Field Artillery on so small an increment as that. As regards the six months' notice prior to discharge, I think, in a way, that is very sound. The only thing is that you have to give and take with Volunteers, owing to their first consideration in life, the earning of their daily bread. The experience I have found is that if a man's civil employment is unexpectedly changed, and owing to circumstances beyond his control he is unable to become efficient, the very best thing you can do for your corps is to let the man go, for it is easy to ascertain the accurate circumstances in connection with the case. By that means you get a great deal more recruits than you lose. I am told there is a

certain corps, or perhaps two, that possess exceptional advantages for artillery training. I have heard of these exceptional advantages, and in a great number of cases they are really exceptional disadvantages. I will tell you what I consider the greatest advantage of these corps I have heard of, viz., that all their drill is done under the one roof, and that, to my mind, is the advantage of these so-called corps which are exceptionally situated. Where you have men scattered all over the place, it is very difficult to get a proper system of drill carried out. If auxiliary Field Artillery were considered, I think there should be no smaller divisions than batteries, and batteries should be so situated that they could be brought together at a drill for brigade division training.

Major F. G. STONE, R.A. :—I have very little to say, Sir, but I think most of what I should have said has been already said by previous speakers. I feel that the lecturer, in his very well worked out scheme, has rather taken the part of a counsel and expatiated only on one side of the question. On that account, perhaps, his estimates are extraordinarily sanguine, both as regards what the Volunteer field batteries which he proposes to create or evolve, could do, and also as regards the money with which it could be done. I regret to say, that after very careful consideration of all his proposals, I have come to the conclusion that he would substitute a very indifferent Field battery for a very good Position battery. I have seen a great deal of the working of Position batteries of Volunteers, both the heavy and the light ones, and I know them fairly intimately. I know the struggles that they have already with regard to their drivers, their horses, their attendance at manœuvres, the amount of money the commanding officer has to take out of his own pocket in order to help the coach along, and so on, and all these difficulties would be multiplied tenfold, I think, in the case of the more mobile battery which the lecturer wishes to evolve. I think further—in fact, I am prepared to bet any moderate sum—that if the lecturer commands a Field battery for twelve months, he will change his views very considerably on the subject of his lecture. I do not quite think it is a thing to take up lightly for the Volunteers, who, with the very best intentions in the world, cannot give the whole of their time and attention to the work. The duty of the officer commanding a Field battery becomes more arduous every day. He has to have more technical and tactical knowledge himself and more experience of how to apply that knowledge in the field, than Volunteers can possibly acquire. Courses of instruction are only small aids, and absolutely nothing in the way of courses of instruction can make up for the practical daily and hourly experience of the working of Field batteries. I think the Volunteers have done as much as they can do, and as much as can be expected of them, in the way they have tackled the Position battery, and in most cases they have tackled it extremely well, and faced the difficulties like men. With regard to one point which the lecturer brings out, the 40-pounder gun, this poor unfortunate 40-pounder gun has been canvassed on more than one platform as being an obsolete weapon. The lecturer himself compares Captain Campbell's statement. "Decisive artillery fire would be at 2,700 to 3,800 yards ; 40, 20, and 16-pounders could give this." Captain Neal says:—"In a country like England, so much broken up by hedges, plantations, etc., indirect fire at such ranges would have to be resorted to ; 40 and 20-pounders have no means for this. Further, as the remaining velocity of the 40 and 20-pounders is so low at those ranges, they cannot be considered capable guns." The remaining velocity of the 40-pounder guns at 3,800 yards is 742 feet. The remaining velocity of the 15-pounder at the same range is 793 feet per second, that is about 50 feet per second more. That in itself is a very small amount, and would hardly justify one in saying that the 40-pounder is useless. But when you go further and consider that the weight of the bullets in the shrapnel shell of the 40-pounder is double, bullet for bullet, that of the bullets in the 15-pounder, I think it is quite on the cards that the 40-pounder would do more damage than the 15-pounder. As regards the 40-pounder being so immobile, the lecturer admits

that mobility means the possibility of being moved; in that I quite agree with him. But what he is contending for here is not mobility, it is manœuvring power, although the word is not used. Of course, high manœuvring power cannot be obtained with 40-pounders, neither, to the best of my belief, could it ever be attained with Volunteer batteries; even if you were to give them Horse Artillery guns to gallop about with, you could not get them in the right place at the right time, with everything efficient. But so far from the 40-pounder being not sufficiently mobile for the purpose for which it is intended, 40-pounders have stood us in very good stead on many occasions. Two 40-pounder batteries went up to Kandahar, a very considerable march. They got there. One went on to Kabul, and fought an engagement on the way with very great success. Those batteries were armed with precisely the same gun that certain officers of to-day are saying is obsolete, immobile, and useless. I should be very much surprised if we see this year out without hearing of the 40-pounder gun being used in preference to 15-pounders in Egypt; and therefore the idea that a 40-pounder gun is an immobile and useless weapon is not by any means shared by a large number of practical soldiers who have to deal with these matters, and are responsible, on active service, for carrying them into effect. There is only one more point, and that is this: that assuming that the evolution of the heavy Position battery is possible on the lines indicated, we shall then have to face the difficulty that we have lost a very valuable part of our defences. It has been considered by those who are responsible for the defence of this country, that heavy batteries of Position will form the most valuable adjuncts—in fact, more than adjuncts—to the defence. I think that there can be no question about it that guns of that nature will be most valuable should such an unfortunate thing ever happen as the attack of an invader being driven home on a defended position. We must have something of the sort, and the cheapest way of getting it is the way we have got it now, and that is by loyal co-operation of the Volunteers. But if the Volunteers should suddenly become light Field Artillery, how are we to replace those batteries of Position? Are we to turn the Regular artillery into 40-pounder batteries, and work up to a higher standard than is required of the less mobile unit? We cannot dispense with them. We must have some heavy artillery to fall back upon, and that is a point which, I think, seems rather to have escaped notice.

Major FRANCIS COOPER, R.A.:—I venture to make a few remarks, because this is a subject I know something about. My experience of the Volunteer Position Artillery goes back some nine years, and I also know the corps from which Captain Neal has taken some of his illustrations. There are one or two questions I should like to ask him. He lays great stress on the impossibility of teaching any stable duties to the men, and I cannot find anywhere in his lecture how he proposes to overcome that difficulty. I do not know whether he proposes to have a fixed establishment of horses for these new field batteries, or whether a horse is to be sent in and experimentally groomed. Then there is another point. He takes the heavy 40-pounder battery as practically immovable, and he illustrates it by reference to a certain battery, qualifying it by saying that it is exceptional. But Altcar is extremely exceptional. It is a sand dune, an excellent rabbit warren, and should have been turned into a golf link long ago. But it is not a place where anybody would go to soldier, except they were obliged to. The reason they go there is because it is close to Liverpool and it is very easy to work up all your efficients. As regards actual practical shooting, there are many better ranges. You have to take things as you find them, and a great number of men cannot spare the time to go an eight hours' journey. Therefore the batteries go down to Altcar to practise because it is within reach. This particular corps took part in an interesting experiment four years ago, when it was first formed. An experiment was made of seeing how rapidly the Volunteer forces in Liverpool could be collected together and moved across the Mersey to repel an attack from the direction of Hoylake. We found that this corps got across extremely smartly

indeed. They got across the ferry, climbed a very steep hill, and got into a position in plenty of time to repel any landing party. The thing was an utter failure from the soldiers' point of view, as operations with Volunteers in the neighbourhood of populous centres will be, because you cannot use the guns for the crowd; and until you can stop the railway sending special trains filled with people anxious to witness Volunteer field-days, I do not see that you will get any useful training at all. That was a most heart-breaking performance. The next point is with regard to these Field batteries that are going to be employed. One of the requirements is a good drill-ground or park near headquarters, or a riding school with sufficient space. I have, no doubt, a great many corps fulfil those requirements, but I should like to ask Captain Neal if he has gone into the question as to how many corps do fulfil the first requirements of a good drill-ground or park near headquarters. It must not be an ordinary public park, even the size of Hyde Park, because that would not allow them to execute movements rapidly and accurately and make long advances in line. You must have more than that. I do not dispute that under exceptional circumstances Volunteers can be taught to drive accurately. If they can get riding drill all the winter and a fair park or open space where they get driving, they can be taught to drive fairly well. I am doubtful whether they would be fit to move across country. If we are to have field batteries they must be up to exactly the same standard as the Royal Artillery. You cannot embarrass the commander by his having to think whether his brigade division of auxiliary artillery can keep up with the other: they must all go together. But even supposing these drivers have been taught in the riding school and in the *manège* and are fit, how are you going to train the officers? I think it is very likely I shall be told that the officers can be sent to Aldershot and Salisbury Plain, to manœuvres—attach them to batteries and train them there. But it is a very different thing hanging about with a battery attached, or finding yourself three miles in front reconnoitring for position when you are not certain how your drivers are getting on behind. As has very quietly been remarked, the salt of the Volunteer service is the hard-working man, the men who volunteer for the love of the thing. I have known hundreds of instances of men who were devoted to the Service but could not afford the time—not the money; although not rich men, they would not mind spending the money, but they could not afford the time to go to Aldershot or Shoeburyness to learn their profession. They have to make the best of their opportunities. I maintain that Position Artillery has been an extraordinary success, and that it was within the capacity of the Volunteers. They could spare the time, I think, to learn fire discipline; and the marvellous way in which in the eighties, and rarely in the nineties, they altered the system of fire attack, and took up fire discipline, is an instance of what they can do. You cannot have impossibilities. You cannot expect men earning their living to give up time to go away. And you cannot get the drivers and gunners. Just as the hard-working officer is the best man, in the rank and file the best man is the man hard at work all day long, who rushes home on Saturday, changes his clothes, and comes down to the drill-shed. Unfortunately in this climate the number of Saturdays in the year is extremely limited, and I do not believe you could get twenty drills in, even supposing the men could find the time. I am speaking to a certain extent of the North-Western District, because that is the part I know most about. I have seen other districts. Volunteers vary. You have a good training ground in London, Wormwood Scrubbs; but supposing we had the headquarters of a Volunteer corps in this hall here, how often could you get the battery down to Wormwood Scrubbs in daylight? Then a good deal has been said about the establishment. Captain Southam said it was a maximum establishment of 160 or 120. My memory is a little at fault, perhaps, but I thought it was 100. It is always a good thing to have a certain amount of elasticity in the establishment, and in a Volunteer regiment you must have elasticity. Captain Neal's statement, 117, I do not cavil at at all. I think it is very carefully made out and a very good statement. It is only three below the minimum

number of the battery on peace footing. You have to put these fellows through medical examination to go on service, and it would not be as stringent as the ordinary medical examination. You have good men in every corps who set a good example, who are cashiers in banks or in important positions, but they could not go. There is one corps we all know, an extremely swell corps, and the very last place they could be put in would be in the field in case of invasion, because they cannot go. I do not wish Captain Neal to think I am captious, but I am very keen about Position Artillery, and I disagree with him, both as regards the heavy guns, which I consider very useful, and as regards the possibility of turning them into Field Artillery.

Colonel A. E. RAY (late 3rd Middlesex Volunteer Artillery) :—My Volunteer experience goes back nearly forty years, and from the very first, when Volunteer Field Artillery was mentioned, it was always said to be an impossibility. It seems to me that is a way this unfortunate country is getting into in other matters besides that we are discussing. The French can do it. In the Franco-Prussian War there was a Volunteer field battery under General Faidherbe, and it was most efficient and did very useful service. Again, if you go to Canada you will find Volunteer field batteries there. They have only two Regular batteries, what they call the Active Militia. The Volunteer Militia are almost exactly the same as our Volunteers here, except that they get pay when they are out training as the Active Militia.[1] About thirty years ago, in the regiment I was in, we always had field guns. When the Volunteer Artillery first started in the sixties, a certain number of them were Fleld Artillery. My regiment had twelve field guns. They were the guns of the period, 6-pounders and 9-pounders. On one occasion we took thirty field guns from London to the review at Portsmouth. Those were the days of the 30s. grant, and there was no extra grant whatever. In these days, when there are extra grants, I think it really could be done, if it were properly encouraged, and the authorities chose to do it. With regard to the difficulty in London, Wormwood Scrubbs has been mentioned, and it was asked how you can get there. It seems to me the same system could be adopted as is, or was, adopted at Woolwich for teaching drivers there. There was always a battery of guns with which drivers were taught. Why should there not be a depôt at Wormwood Scrubbs, with a certain number of guns and horses? Every Saturday afternoon a portion of the various corps could go there and be trained, and you would get any number of men only too glad to do it. During the summer months this training could be carried on every evening. I had no intention when I came here this afternoon of entering into this discussion, and I only make these few remarks for what they may be worth.

Captain NEAL, in reply, said :—Colonel Robinson said in his speech only one thing I can say anything about, viz., that the officers could give their evenings and Saturdays, but they were unable to give any other time. I take it that an officer who could go to camp for a week would go whether horses are taken or whether they are not. Of course, it would be just a method that would have to be adopted, a system of getting the horses up and having the battery ready for officers and men. An officer now comes to the drill-shed and spends very often an hour-and-a-half, sometimes two hours, in the shed. I do not suppose he would mind spending another half-an-hour in the drill-shed or drill-field with a horse under him. I rather fancy there would be no difficulty about that. I wish to point out that in my lecture I did not advocate a wholesale conversion, but I say that in my opinion the Force is capable of improvement. I also say in another place that it could evolve and become a reliable service. I never thought for a moment that a battery of Position Artillery could ever evolve and become actually on a par with a battery of Field Artillery. I have served too long in the

[1] The Volunteer Militia have to turn out for a certain number of days' training like our Militia, for which they are paid. They also attend evening drills like our Volunteers, for which they are not paid.—A. E. R.

Field Artillery to suppose for a moment that is possible. But I think, considering that if a state of war existed and our batteries were to be sent abroad, if we had some well-trained Volunteer Field Artillery they would be certainly a very great help to the country. Captain Southam suggests something about the cast horses being sent to the Volunteers. It costs 14s. a week in a place like Liverpool to keep a horse, exclusive of grooming, so I do not think that the proposal can be considered an economical one. I do not think this would be possible, because of the cost. With regard to the riding lessons, all I can say is that we do ride now from one-and-a-half to two hours, and we give each of the men a good bucketting about. The more we give them the better they like it; and the horse stands it. We pay 5s. a lesson for the horse. The contractor does not say anything about it as long as he gets his horses in at a fairly early time of night. I think the more you give a man (officer or non-commissioned officer) to do, mounted, the better he likes it. When I speak of post practice and the bar, you know that arranging these things always takes a little time, and if you bound the ride down to last an hour you would not have very much instruction, because it takes twenty minutes or half-an-hour to get a ride all the way through with regard to post practice. As to our rapidity of movement, I do not think we can get anything quicker out of it than we do now. We had a march to Hale after the Bidston Hill march that Major Cooper spoke of. We were very careful to note the halts, etc. The rate of travel was $2\frac{1}{2}$ to $2\frac{3}{4}$ miles an hour during the exercise. The road was fairly good all the way, and I do not think we lost any time, but the heavy horses moved so slowly. The drivers could not get them on. Both horses and men got tired, and, being unused to the work, lagged. You get them for the first two or three miles very much better than you do afterwards. With regard to the places where you could instruct a battery in its drill, I dare say there are many places, where there are now Position batteries, with a moor something like Wormwood Scrubbs (which I do not know) somewhere near. In Liverpool we have two parks, one a very large field and one rather restricted which are available for drill. I have no doubt that, if you taught the drivers driving in the *manège* with the guns, much as it is taught in the Royal Artillery, the driving difficulty would be overcome. Of course, if the corps was going to gun practice and taking its guns and horses with it, I take it the very last place they would go to would be a place like Altcar. The commanding officer would naturally look out for a place where he would have an opportunity of manœuvring his battery, and have gun practice and battery drill during the time he was in camp. With regard to ammunition wagons, I thought when I wrote that, that I should be open to mis-construction. Should we get the equipment that I favour, we should not require any wagons except the ammunition and store wagon, because we have only 200 rounds. Each limber carries 46 rounds, therefore we should only have 16 in the battery to carry. We have to carry some of the ammunition of the 40-pounder now in the ammunition and store wagon with the four wagon batteries. Then as to the £300, I think I have been misunderstood there. It will really be £500 by my arrangement. Of course, it would be an additional £300 to what is paid now; but the £200 reduction in expenses that I propose, if added, would make it £500. With regard to what Major Stone says, I do not think I can say anything; he seems to be altogether practical. But I think there are more bullets in a 15-pounder shrapnel shell than there are in a 40-pounder.

The CHAIRMAN (Sir John Ardagh):—I should like to make a few remarks on this subject before closing with a vote of thanks to Captain Neal for the admirable lecture which he has given us and for the very interesting discussion which it has evoked. I have been familiar with the question of Volunteer Artillery from the very beginning of the Volunteer movement. At that time they inherited what were called Batteries of Position—18-pounders—stored in gun-sheds at various places along the coast. They were at first used

simply for the purpose of drill. Then a few smooth-bore field guns were added, and, as we have heard, some of them appeared at the great Volunteer reviews of the time. The 18-pounders were gradually replaced by 40-pounders, which used to appear at the Brighton reviews; while at Portsmouth the old smooth-bore 6 and 9-pounders were seen. That went on without much improvement for more than twenty years. In 1887 the system of organising the horsing of the Volunteer Artillery was started for the first time on a permanent and efficient basis. The fitful mobility which had hitherto been attained was entirely dependent on the zeal and the purses of commanding officers, who sometimes horsed their guns and brought them out on the occasion of the great reviews. There was never anything like an attempt at real mobility on an organised scale. The system of having really mobile batteries, which was started ten years ago, and which has developed in a very satisfactory way, was devised with a definite object. The Volunteer Artillery were then given their appropriate and honourable place in the general defence of the country. The 40-pounders, which I was very glad to hear Major Stone defend, were assigned an important place as guns for the defence of chosen positions. They are still very effective guns indeed, when you consider the nature of the pieces likely to be brought against them at the present time, and perhaps for some years to come. The 40-pounder has a longer range than the field gun by which it is likely to be opposed. Its shell has a larger bursting charge, and its shrapnel, if it has not more bullets, at any rate has got a greater weight of them. I should like now to mention a few points which the lecturer and the speakers have referred to. They advocate the diminution of the establishment of batteries. Now, I think the authorities in the War Office had in their minds, when they sanctioned and maintained the larger numbers which the lecturer complains of, the fact that we cannot always expect every Volunteer to turn out or remain on duty continuously. The state of anticipation or preparation for war may last some time. What we expect is, that, say out of a force of 1,000 men we shall be able to keep 500 in the field, and renew that 500 by changing from time to time with the other 500 who are at home. Many of the effective Volunteers are men who cannot remain absent for any length of time from their homes, duties, and avocations, though all may be relied upon to come forward on a great emergency. I think it has been sufficiently explained to the meeting by the speakers that we cannot afford to dispense with guns of Position. Even if we had available now a large number of the most modern field artillery guns it would not be desirable to replace with them the heavier guns of Position which are now out with the Volunteers. The guns of Position are absolutely indispensable to our system of defence. But up to the present we have been practically obliged to cut our coat according to our cloth There have been only a certain number of new guns available, and these have properly been allotted to the service batteries. Therefore we were obliged to accept and utilise the guns which have been discarded by the Royal Artillery, and as the improved batteries and the more modern pieces were served out to the fighting batteries, the guns which were, I will not say obsolete, but which were of a less advanced description, were allotted to the Volunteers. That is the way in which we have come into the possession of all the 20 and 16-pounders. In due time we may hope that these guns will be replaced by other and more modern pieces. I think I need say nothing more, except to ask the meeting to join in a vote of thanks to Captain Neal for the extremely interesting lecture which he has given us.

THE FIRST SIEGE OF RHODES, 1480.

By Rev. W. K. R. BEDFORD, M.A.

Wednesday, June 1st, 1898.

Sir VICTOR HOULTON, G.C.M.G., in the Chair.

WHEN I told the history of the siege of Malta, I presented certain fac-similes from the woodcuts of Sebastian Brandt, illustrative of incidents in the chronicles of the Order of St. John, which seemed to give satisfaction, and it struck me that the book from which they were taken might afford material for another lecture on the first great success which the Knights Hospitallers obtained over their ancient enemies the Turks.

After the fall of Acre in 1291—where the Hospitallers shared the general defeat of the Christian garrison of the Holy Land—the relics of the convent proceeded to Cyprus, where, in the town of Limasol, they recruited their strength in men and money. Here they soon became a great naval force, and desiring an independent headquarters port of their own, early in the fourteenth century they bethought them of Rhodes, an island in every way suited to their political aspirations; and after experiencing one repulse from the Saracen inhabitants of its capital, finally succeeded in capturing it in the year 1310.

The island of Rhodes, some 12 miles only from the coast of Asia Minor, is 46 miles long by 20 wide, and is said to derive its name from the roses with which it abounded. The Greek name, the Isle of Serpents, indicated a less pleasing abundance; but with the exception of the legend of de Gozon and the Dragon, we do not hear much of venomous reptiles after the occupation by the Knights. Having driven away the Saracen pirates, and introduced a new element into the population by bringing Christian refugees from places under Mahometan sway, successive Grand-Masters fortified the town and port, improved the agriculture of the country, and increased their fleet. It was during their tenure of the island that they divided the Order into langues or national corps, and it was at this period that the suppression of the rival Order of the Templars much augmented their finances. They became so formidable that, after the capture of Constantinople, Mahomet II. decided to carry his victorious arms to Rhodes, though wars with other countries deferred for some years the prosecution of the design.

In the year 1470, the Sultan overran and captured the island of Negropont; but a war with Persia breaking out, no attack was made,

as had been expected, upon Rhodes. Nevertheless, Grand-Master D'Aubusson, on his election in 1476, made ample preparation for a storm which he saw could not much longer be averted. It broke upon Rhodes in 1480.

I propose to follow in the main the narrative of William de Cavorsin, Chancellor of the Order, written in 1490, when the siege was fresh in everyone's memory, and translated into English by John Kaye, Laureate to King Edward IV.; being one of the early specimens of the Caxton Press, under the title of the "Delectable News and Tidings of the Glorious Victory of the Rhodians against the Turks."

Cavorsin, supported by other historians of the day, attributes the attack on Rhodes to the suggestions of sundry renegade and traitorous Christians who forsook their faith to follow the waxing fortunes of Mahomedanism. One of these, a bankrupt Rhodian named Anthony Melagolo, espied the defences of the city, and "pourtrayed and printed them on a paper," which he conveyed to the hand of the ruler of Constantinople.

Melagolo also "said and affirmed that a great part of the walls of Rhodes was old and in decay, and that there were but few men of defence in the city, and also that they lacked victuals," and in this misleading estimate of their strength he was supported by another renegade, Demetrius Sopheano, who had apostatised after the destruction of Negropont, where he had been made a prisoner by the Turks. But the worst of this crew of traitors was one George Frapant, called by Cavorsin Master George, "a man of subtle wit and great cunning in making of bombards, culverins, serpentines, and such instruments of war." This George (continues Cavorsin) was "a personable man and welbesene, of great eloquence and of great malice, a Dutchman born." He too had made a plan of Rhodes at Constantinople, where he lived with his wife and children.

This precious trio were not aware how much had been done by the Grand-Master D'Aubusson to strengthen the defences of the city, nor that the Grand-Master's elder brother, the Viscount de Monteuil (Cavorsin calls him Montelyon) had arrived at the head of a considerable force of men-at-arms to take service as captain-general under his brother. The Turk, indeed, conduced to his own defeat by sending Demetrius Sopheano with proposals for peace, and thus giving additional time for the completion of the defensive measures.

However, on the 23rd May, 1480, 160 large vessels, filled with soldiers, appeared off the coast of Rhodes, and having disembarked their forces in the bay of Trianda, returned for more. Artillery, also, and guns of an enormous calibre were landed under the cover of St. Stephen's Hill, and shortly the city was closely invested. The command of this host, estimated variously at 70,000 or 100,000 men, was entrusted by the Sultan to his Capoudan Pasha, another renegade Greek of the Imperial house of Paleologus, who had embraced the Moslem faith after the capture of Constantinople.

The city and port of Rhodes lay at the N.E. extremity of the island, the harbour being in two sections, the inner and the outer port. The outer, or port of the galleys, was formed by a long strip of land running N., and at its extremity defended by a tower called St. Nicholas, made, says Cavorsin, "in the old time, and after the old and huge making of walls," the nether wall especially was of "big matter and substance." The inner port was formed by two moles, protected by the towers of St. John and St. Michael respectively. The land defences were a rampart and a ditch, the former 40 feet wide, and the ditch from 40 to 60 feet deep, and from 90 to 140 wide. Five towers or bastions also defended it on the south and west, known as the Italian, St. John's, St. Mary's, the Spanish, and St. George's. The Grand-Master's palace, strongly fortified, stood beyond the last-named. The various langues had each its station on the walls, France taking St. Nicholas and its mole, Germany St. George's Gate, Auvergne the Spanish Tower, England from that point to St. Mary's, which they held jointly with Aragon, who continued the circuit to St. John's Gate. Provence held the wall to the tower of Italy, and that langue shared with Castile the sea face on the east.

Before the arrival of the Turkish Army, the islanders generally had taken refuge within the walls, bringing with them their crops, even to the unripe grain, plucked up by its roots. Some demonstrations were at once made by Turkish skirmishers against the walls, which were easily repelled; but one of the Knights, following up his victory too far, was slain, and his head displayed on a spear in the camp of the enemy.

When, however, the siege train had been landed, the Turks established a battery, protected with great logs and trees and boards of defence, in the churchyard of St. Anthony to the west of the outer port, from which they cannonaded the fort of St. Nicholas. The Knights on their part retorted by an enfilading fire, which inflicted heavy loss upon the right wing of the Turkish Army.

A surprising incident now took place. Master George arrived at one of the gates of the town, and sought admittance, under the plea that he had deserted from the Mahometans, and desired once more to become a Christian. This caused no little perplexity and division of opinion among the garrison—some believing him sincere, others suspecting treachery. But the Grand-Master decided, after an interview, in which George answered questions "with boldness and with wit, and, as it seemed, with truth," that he should be admitted, though placed under strict surveillance. He stated the total force of the Turks to be 100,000 fighting men, and "sixteen great bombards, everyone 22 feet in length, which cast stones of four spans compass about."

The Christians had their friends, too, in the Turkish camp, and letters were shot, tied to arrows, into Rhodes, warning the garrison to beware of George.

But all this time the battery from St. Anthony had been thundering away at St. Nicholas Tower, and "brake it stoutly and put it in extreme danger, for tho' the nether old ancient wall stood steadfastly it was so beated in the side towards the west that there was no manner of repara-

tion possible." D'Aubusson therefore threw up with the ruined fragments a new defence across the mole. He also sank under the sea-wall casks and boxes full of nails, to render the landing difficult. The garrison was strongly reinforced, and fire-ships "full of gunpowder and brimstone and the like" prepared for the destruction of the Turkish rowboats.

On the morning of the 9th of June the assault took place. Fifty gallies landed a large force of soldiers, who attempted to scale the tower, but the grappling irons were broken, some of the boats set on fire by the fire-ships, and the enemy, after several hours' conflict, were repulsed at every point, with a loss of seven hundred men. D'Aubusson, who had himself led the defence, went in state to the Church of Our Lady on the Hill of Philerme to return public thanks for his victory.

The next act of the sanguinary drama was commenced by the removal of the Turkish batteries to the south of the city, where they assailed the walls of the Jews' quarter with stone shot, and seriously breached them. "Another great instrument," says Cavorsin, "they put at foot of a hill towards the west, above which hill stood the gallows of the justice of Rhodes, and from that place they cast great stones on Rhodes in that part where the windmills were, and broke all to pieces." In fact, a tremendous bombardment of the city generally commenced; "they never heard shooting of bombards so great and so horrible as these were." In lieu of shells, apparently they "cast into the air casks full of great stones the which fell upon the houses of Rhodes and put them in a wretched ruin, with great murder of them that were within for that time, and furthermore they put in a great thought and sorrow all the whole city of Rhodes, for no person was sure in house without he were in a cave."

D'Aubusson, after one solemn religious ceremonial, directed the attention of the whole inhabitants—men, women, and children—to measures of preservation. The Jews' quarter was pulled down, and a barrier erected with the materials. The non-combatant population were lodged just within the circuit of the walls, and protected by "mighty scaffolds, the which were not so high as the walls of the city, for because that the Turks should not espy it."

The Turkish commander, finding that he had met with his match, now resorted to the Oriental expedient of procuring the assassination of the Grand-Master, and found two rascals, who, under pretence of conversion to the Christian faith, should obtain admittance to Rhodes, bringing poison with them. This failed, for the first-comer proved "inconstant and variant," and thus excited suspicion, and was put to death. The other, on his approach to the city, was so roughly received that he fled back to the camp.

Nor was this the only repulse which the enemy received, for a battery which they were establishing close to the wall of the Italian Tower, "upon the banks of the ditch," was stormed in the night by a forlorn hope of fifty of the younger Knights of Italy and Spain, and totally destroyed, without loss on the part of the Rhodians.

The enemy decided now upon a second attempt at St. Nicholas Tower. They constructed with voided pipes (empty casks), and planks

nailed on them, a floating bridge a quarter of a mile in length, and "wide enough," says Cavorsin, "for six men on horseback," and fixed an anchor at the extreme point of the mole by which to wash it across the port. This scheme was detected by an English sailor, Roger Jervis, who detached the rope and carried off the anchor, for which he was rewarded by the Grand-Master with 200 crowns.

At midnight on the 19th June the assault took place. The bridge had to be towed into position by rowboats, while the remainder of the flotilla carried over reinforcements. This proceeding, which the Turks had hoped would take the garrison by surprise, had, however, been anticipated, and every preparation made to give the enemy a warm reception; not only were the assailants received with a tremendous fire and determined bravery, but the fire-ships were brought into action, and towards daylight the bridge itself was destroyed by the aim of the cannon from the tower. Many of the "carracks" (the ships), says Cavorsin, drifted out to sea, and the whole attention of the mariners was concentrated upon self-preservation, so that the troops who had been landed on the mole simply found themselves left to their fate, although from the opposite bank a fire was still maintained "of great stones of bombards and of guns and wild-fire and arrows of bows and balustres." "From twelve of the clock," says the historian, "until five in the day they fought all by dark, *but* as the fire of the bombards and the flame of the wild-fire gave light." For three days following the corpses of the drowned Turks were constantly being washed ashore "arrayed with gold and silver and precious clothing," and stripped by the garrison and townspeople, for not only were 3,500 of the enemy destroyed, and several ships lost, but a large proportion of the slain were men of note, the flower of the Moslem Army. Ibrahim, "a cousin of the great Turk, the death of the which was a great sorrow to the great Turk and to all his people, and his body was found upon the bank spoiled of the Rhodians" is especially noted.

Deserters from the Turks, who now began to flock in, stated that "the Bassa by the space of three days for sorrow and thought spake with no man of his company nor with none other," so great was his mortification and dismay.

While, however, this assault failed, much progress had been made by the trenches opposite to the Italian Gate. Not only were the batteries again advanced, but mines were commenced, and an attempt was made to fill part of the ditch with stones and rubble so as to make a causeway, the ditch being "made equal and plainassed to the height of the broken wall, so that lightly they might come for to fight hand to hand with the Rhodians." This work the garrison countermined, carrying off the stones into the city. A gigantic sling, called a Trebuke, was also set up by the Knights, which crushed with its stones the mantlets and cannon of the Turks.

It would appear that this last step was taken by the advice of Master George, but as it had the effect of drawing a more furious cannonade against the breach, to which now the Turks directed their sole attention, George was arrested on suspicion of being in communication with the

besiegers, fresh letters tied to arrows having been shot into the town accusing him. Being questioned, he replied, "boldly and with shrewd language," but after being put to torture made confession, which he subsequently confirmed, that he was the spy and agent of the Turks, and he was hanged forthwith. His two fellow renegades, by whose advice the siege had been undertaken, had preceded him in death, for Melagolo (so says Cavorsin) was "mischievously slain in Constantinople" four days before the expedition sailed, and Demetrius fell on the first attack.

"But the Turks perceiving that the height and heap of stones was made less, and that they could not creep up by that way, but if they hasted them," pressed on the preparations from escalade. The Knights "within the walls, not far from the ditch, made a front of a wall with stakes and earth in the midst, and with bulks thrust strongly together, and tempered it with water, like as they make a mud wall, and upon this wall they put guns, culverins, wild-fire, and barrels full of pitch and sulphur, and great heaps of stones, and such things that should let the Turks to climb up."

Before making the final attempt, the Turkish general once more tried to induce the inhabitants to capitulate. He sent a Greek renegade with a message that an envoy from the Sultan desired speech of the Grand-Master, and he renewed the attempts by letters shot into the town to influence the Greek inhabitants to desert the Knights by promises of advantage. The Grand-Master consented to a parley, and appointed Anthony Gaultier, castellan of Rhodes, to represent him. At the time and place appointed, Soliman Bey, the representative of the Turks, opened the conference in a speech, marvelling "that such a little city should withstand and resist against the great might and puissance of the dreadful Turk which had conquered two empires and so many kingdoms." He menaced them with the direst consequences were the city taken by storm, and promised peace and security for themselves and their goods should they surrender.

The reply of the Hospitaller was quite as uncompromising:—"The Rhodians had great marvel that the Turks, with so great navy and with so strong army, against the honour of all manly warriors should exhort their enemies to peace." Within the city of Rhodes, he told them, "there was a common accord among the Greeks and Latins." If the Turks broke up the siege they might listen to pacific overtures from Constantinople, but in Rhodes they would only meet hand to hand. The people of Rhodes were not cowardly Asiatics, but strong manly Christian folk.

After this there was nothing for it but the arbitrament of the sword. The bombardment recommenced with renewed vehemence both at St. Nicholas and the Italian Tower; at this latter point the incessant fire drove the defenders from the walls, as no doubt was intended; and here about an hour after sunrise, on 27th July, a strong column of Turks burst upon the undefended ramparts. The battered breach gave easy access to the walls, and when the garrison recovered from the confusion which

at first prevailed they were in the singular position of having to retake their own defences by escalade.

Cavorsin says that for several days before the Turks had come to the ditch "with their tabrets and made songs of mirth, to which the defenders on the other side of the broken walls answered them as merrily again with trumpets and clarions," and he also informs us that the Turks "afore they gave assault, after their false belief called to their help Mahomet, and washed them all naked in running water in token of purgation of their sins, and after they arrayed them every one in their quality of war, they brought sacks with them to put in the goods of Rhodes and tied at their girdles ropes to bind their prisoners, for they hoped in their god Mahomet that they without fail should have victory."

There were four great ladders fixed upon the inner side of the wall, which was 40 feet high, and down one of these a portion of the invaders, after fixing their standard on the walls, descended to the streets. This ladder the Lord of Montelyon destroyed at the command of the Grand-Master, who led his men up to the walls by another way, and after a furious encounter, which lasted two hours, cleared them of the enemy. Within the city the other D'Aubusson was equally successful driving back the column at the breach and slaughtering those who were thrown from the walls by the Grand-Master and his forces, "so that the street called the Jew's by the walls was full of their blood and carcass," and finally driving back in helpless rout the whole body of the assailants, pursuing them to the "tents and loghouses, where they slew many of them, and spoiled them of their jewels and harness of war and of their standards, the which they brought with them to Rhodes, crying merrily and making great joy, and entered again into Rhodes through the broken wall for a perpetual memory."

The sad drawback to this joy was the fact that the Grand-Master lay prone under five wounds, one supposed to be mortal. He lived, however, until 1503, and died at the age of eighty years.

Three thousand five hundred Turks had fallen in this final and disastrous fray. It seems almost miraculous that with so much superiority in men and material they should have been defeated, and the worthy and devout William Cavorsin had no doubt at all upon this subject. Thus he writes :—"By the commandment of the Lord Master a banner of Jesu Christe, another of Our Lady, and another of St. John Baptist, patron of the Order of Rhodes, were set up on the walls when the battle was on both sides most sharp. And anon after, the Turks saw properly in the midst of the clear and bright air a cross all of shining gold, and also saw a bright virgin, which had in her hands against the host of the Turks a spear and a shield, and in that sight also appeared a man clothed in poor and vile array, which was accompanied with great number of fair and wellbeseen men in arms, as if he would have come down to the help of Rhodes. By the cross of gold we may justly understand our Saviour Jesu Christe. And by the Virgin we may understand Our Lady the Blessed Mary. And by the man poorly clothed we may understand the Holy Saint John Baptist, Patron and Avoncre of the Order of Rhodes,

which was accompanied with saints and angels of God for to help the Rhodians. The which godly and heavenly sight put plainly the Turks in so great wonder and fear that in no manner after they took counsel among them to leave their intent and turn again to their country, so that through the grace and mercy of Almighty God and manhood of the Knights of Rhodes and obeisance of all the people, Rhodes was and is preserved and kept from the Turk's captivity."

The immediate consequence of their defeat was the precipitate departure of the besieging force; "they went backward," says Cavorsin, "a large mile, and there made a new camp," from which they embarked their siege train and their wounded, whom they landed at the port called by Cavorsin Physcum (Phineka, a harbour 40 miles to the east of Rhodes), and then returned for the fighting-men. During this time much destruction was wrought to the property of the country folk by the irritated Turks, who destroyed gardens and vineries and victualled their ships with cattle. They also endeavoured to intercept two ships sent by Ferrand of Aragon, King of Naples, to the relief of the garrison, which just then hove in sight, but were not able to enter the haven on account of the fire of the Turkish cannon. One was injured in the mast, and the other put to sea, "for the sea was so rough they dared not anchor." The injured vessel at length the next day got safely into harbour, where she was joined by her consort after a naval engagement with twenty gallies, which lasted four hours and terminated in the repulse of the Turks and the death of their admiral. This reinforcement hastened the departure of the Turkish fleet, which sailed direct to Constantinople, where the general, Paleologus, was condemned to the bowstring, though he finally escaped with exile to Gallipoli.

The most probable estimate of the loss of the Turks in this siege is about 9,000 killed and 30,000 wounded. Although we have besides Cavorsin's narrative two others, one by a Knight, Almeric or Merry Dupuis, and one by a Turk, Khodgin Effendi, there is no statement extant of the strength of the garrison or the loss of the defenders.

I do not think that I ought to finish this paper without a brief summary of the second siege and the events which took place in the intervening years, the last of the occupation of Rhodes by the Order.

In 1480, immediately after the retreat of the Turks, Rhodes was visited by a severe earthquake, which did so much damage that the Sultan was encouraged to contemplate a renewal of the struggle at Rhodes. He died however in the following year, and his sons Bajazet and Zizim contended for the throne.

Bajazet was successful, whereupon Zizim threw himself upon the hospitality of the Knights, who, considering him a dangerous guest, yet unwilling to give him up to his brother, sent him to France where Charles VIII. consented to receive him. The French king handed him over to the Pope, Alexander VI., where he died, not without suspicion of poison, in 1488.

It was at this period that Bajazet made a peace with the Order, and propitiated them by the gift of the hand of St. John.

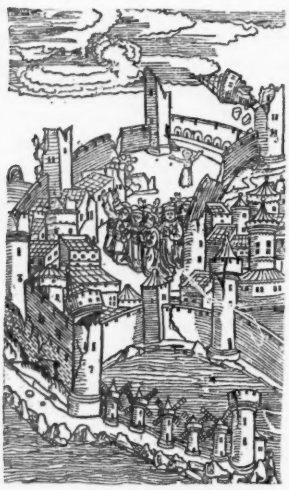
D'Aubusson died in 1503. His successor, D'Amboise, built the fine Gateway at Rhodes, and died in 1512.

On the death of Grand-Master Carretto in 1521, a keen contest ensued between D'Amiral and L'Isle Adam, which was determined in favour of the latter.

Solyman the Magnificent, who had succeeded Selim in Turkey, in 1522, determined to take Rhodes, and on the 26th June of that year arrived with 100,000 fighting-men and 60,000 pioneers.

Two large cavaliers were constructed over against the towers of St. Mary and of Italy, and a series of assaults commenced upon the same lines as those which I have been already recounting.

The great assaults were made in the latter part of the month of September (13th-24th), but though the garrison did not number much more than 4,000, they were repulsed. The Sultan was much disheartened and publicly disgraced his generals.



THE EARTHQUAKE AT RHODES, 1480.

DEATH OF MAHOMET II.

Within Rhodes, however, disunion and disaffection prevailed. D'Amiral was tried for treason and executed, though his guilt seems doubtful. But the population of the city and of the island clamoured for a capitulation, and sought terms for themselves. So that though L'Adam repulsed an attack as late as December 17th, he had to sign a capitulation, and the Knights left on January 1st, 1523.

A Mussulman history of this siege is extant by one Ahmed Hafiz, but, though curious, does not add much to the accounts of other historians.

The CHAIRMAN (Sir Victor Houlton):—As nobody wishes to make any remarks on this occasion, I will try the patience of my audience for a few minutes. Everybody must have been interested and pleased with the lecture which Mr. Bedford has given us, particularly so as it has been illustrated by so many interesting views which

give a colour and a strength which are not possessed by a lecture bereft of these accessories. About this time last year, under the chairmanship of Sir Lintorn Simmons, our lecturer gave us a most interesting account of the siege of Malta of 1565. He has antedated this to-day by his interesting account of the siege of Rhodes. In fact, Mr. Bedford has made himself *par excellence* the historian of the Knights of Malta, whether domiciled at Rhodes or at Malta; he is the recorder of their valiant deeds, of their chivalry, of their personal courage, and also of their utility in keeping the infidel not only out of the islands, but off the shores of what Lord Beaconsfield so prettily called "The Violet Lake." I suppose we must consider that the end of the Order of St. John took place when, like many another Order, its utility ceased. But what I always regret, and what I always shall regret, is, that when Napoleon Bonaparte captured Malta at the end of the last century, at that time the representative of Malta was such a fallen-off Grand-Master as Hompisch! *Quantum mutatus ab illo Hectore*—whether we choose to embody that Hector, either in the splendid personality of Grand-Master L'Isle Adam, or that of La Volette, both magnificent specimens of chivalry and of courageous humanity. If we only read history merely as an amusement, and if we do not ever take to heart the lessons which it inculcates, we lose a great deal. Our lecturer told us that the second siege of Rhodes was lost by "starvation." Now allow me—because this is a very important point—to tell you that I received yesterday news from Malta, an island not many days' steam from Rhodes, from which I learned there was a great scarcity of grain there. That is a very important point—Malta, as you know, has an immense population. I dare say you have heard that in Belgium there are 600 people to the square mile. In Malta there are 1,400 people, and there are 175,000 inhabitants. That makes it very important that that island should never be in a position under any circumstances of being without provisions. We are living at this moment in very ticklish and very hazardous times, and I think it would be a very brave man who would give an answer to the old song, which I dare say many of the ladies present here know—"What will to-morrow bring, who can tell?" It would be difficult to answer that. Once at Malta we had a very great governor, a man called Sir Thomas Maitland, otherwise "King Tom." He was no namby-pamby governor, but a man of genius, energy, and talent; and in 1802, in the House of Commons, he made this observation. At that time the French were thinking of attacking the West Indies, and Maitland said:—"Honourable Members seem to me to be oblivious that there is such a thing as a British Navy. If the French Fleet wish to attack the West Indies, they will have to take passes from the Admiralty. I cannot imagine any purely military nation being formidable to England unless it also holds a naval power, co-equal, with its military power." Now that was in *1802*. How do we stand at this present moment in 1898? What are those great military nations, Russia, France, and Germany, doing now? They are altogether discontented with being only military nations, and are bent upon spending the most gigantic sums in order to become naval nations equal in power to what they are as military nations. That is the case that we have to look to. I venture to bring these subjects to your consideration, because I think it is immensely important that we should take precautionary measures now in our second stronghold in the Mediterranean, that the fate of Malta should never be the same as that of Rhodes, and be lost by "starvation." Malta has most extraordinary advantages, more than any other place, I believe, in the world. There are fosses or receptacles for corn belonging to the Government, excavated in the rock, capable of containing 127,000 quarters of wheat, that is to say, the entire consumption of the island for twelve months. Now, I do not say that it is necessary now, even though, as I said before, one never knows what to-morrow may bring forth. I do not think it is necessary that we should fill the whole of these receptacles with corn, and keep in them a year's consumption. But what I do believe is very necessary, is that

you should have 30,000 or 40,000 quarters, which, at the rate of 10,000 quarters a month (which in my time was the consumption of the island) would give three months' provision in Malta for the inhabitants. What did our lecturer tell us? Why, he said that at Rhodes the town was lost because the inhabitants could not bear starvation. Well, there are 175,000 people in Malta. They would not like to know that there is no such thing as provisions for the inhabitants in Malta in case of blockade. I recollect once, years ago, we had then a weekly return of what amount of corn there was in these receptacles. I once found that there were only 5,000 quarters, that is, "a fortnight's consumption" for the whole island. That would have been an awkward moment for us if war had taken place. However, what I venture to impress upon you is this, that it is most important now —and I say this because I hope it will go further and be made public—that the Imperial Government should ascertain at this moment what is the amount of corn in the grain fosses of Malta, and should certainly take some steps in one way or another, either by legislation or by purchase, to ensure a three months' reserve for the use of the population. It would amount but to a small sum, because these curious receptacles for corn are cut out of such a peculiar quality of stone that for three whole years you can keep wheat just as sound as you put it in, and also take it out in the same way without deterioration or loss in weight. I am really ashamed to have said all this to my audience, because it has nothing to do with the siege of Rhodes except that it is on parallel lines, and that is very important. To-morrow might happen in Malta the same thing which happened in Rhodes. I hope the Imperial Government will take this to heart. I may tell you that during my tenure of office—I was twenty-eight years Chief Secretary at Malta and fifteen years a resident, that is forty-three years—this very question has been raised nearly forty-three times, but never has there been any practical and useful result of this investigation—but once, when the remedy endured only for a short time. The very thing that happened to Rhodes might happen to-morrow to Malta, supposing that war broke out, and I suppose that you would not give a year's notice as you do to a tenant, but it would come suddenly upon us. I must make an apology to the audience for having ventured to say this. I will only add that in Malta there is plenty of shot and shell, but shot and shell are not eatable, and I think it would be very advantageous if we were to put at least three months' entire provision for the whole island in these fosses or receptacles which could not be moved out by the merchants. I must tell you that the merchants of grain now use this at a pepper-corn rent for their own convenience, and there is no law which prevents them shifting it out whenever they like, and there is no law which leaves it in the power of the Government to say "No, we will not let you take out more than so and so." I think that as shot and shell are not eatable, it would be just as well if we at all times were to ensure a three or four or even five months' provision for the 175,000 inhabitants of Malta, a step which would give great encouragement to the inhabitants of the island, and add immensely to the security of this fortress—our second naval base in the Mediterranean.

ANNUAL REPORT OF THE SECRETARY, NAVY DEPARTMENT, WASHINGTON.

MR. JOHN D. LONG, Secretary of the United States Navy, printed and issued the annual report of his Department in November of last year (1898). The period over which the report extended covered the time occupied by the Spanish-American war, and promised in consequence to be of greater value than any report lately issued of the same nature; but the promise is only partially fulfilled; reticence on some points is excessive, and the statements in many cases are those of an advocate rather than of a judge. On the opening page is recorded a proposition open to the gravest argument. The writer says:—"Throughout the year 1897 the vessels on the North Atlantic station were busily engaged in enforcing the observance of our [*sic*] neutrality laws, and the Department exercised all possible vigilance and activity in that regard."

Much turns on the meaning of *our* neutrality laws. Have the Americans a special form of neutrality law? Or have the ordinary duties of a neutral, as described in manuals of so-called international law, any differing clauses? It is certain that the neutrality of the United States Government towards the Spaniards, who were face to face with a tremendous uprising, was in no sense a benevolent neutrality, even if such a contradiction in terms be admitted: that which is benevolent to one of the fighting Powers is proportionate malevolence to the other. The Americans did not prevent filibustering raids in aid of the Cubans, and clearly it was in their power so to do. Their fleet at a later date, and on a war footing, wiped out the Spanish fleet; and if one tithe of the energy displayed during the war had been expended before its declaration, filibustering would have been stopped, and the result for the world's history would have been different to that which is now written.

The United States undoubtedly had the power, but the will to take exceptional measures in the face of exceptional difficulties was absent. This by no means proves or states that the Cubans were unjust in their claims against the Spanish Government, and the genuine sympathy felt by the Americans for a down-trodden people near their own coasts receives due consideration from the natives of this country. But the plain statement is incontrovertible, that the neutrality laws were not upheld with that force which the United States could undoubtedly wield, and of which, after the outbreak of the war, they proved themselves to be the absolute possessors.

On 15th February the "Maine" was destroyed, and the cause of her destruction is to this day a mystery to all, unless it was criminally caused,

and in that case the few criminals engaged are the exception. It may have been a criminal action, or it may have been an accident, and a not improbable one, as the magazines of the vessel were unsafe from excessive heat, and had been so reported. Experiments show that a charge placed in a thin cylinder, in the same proportionate position as the fore magazine of the unfortunate vessel, with weights representing the turret above, when exploded by electricity, opened the bottom of the cylinder and curled up the lower strake of the tube exactly into the unexpected position reported of the "Maine's" garboard strake, that is, high up on the forecastle, and with the original outer side upwards. If the hull is raised, as may probably be done, a more searching analysis will be possible. A report was published on 21st March, after the examination by the Board, and it is to be regretted that no trained officer was capable of personally discovering the exact state of the sunken vessel. Without casting any doubt on the good faith of the divers employed, greater assurance would have been afforded if an officer of the United States Navy could have been found who would have undertaken the task.

On 9th March Congress appropriated ten million sterling for national defence, and purchases of vessels and warlike stores were promptly negotiated. Flotillas on foreign stations were warned of a possible conflict, and home ships were organised in two squadrons—one at Key West and the other in Hampton roads—"to defend our own coast."

The battle-ship "Oregon" left San Francisco for Callao. She was one of the most useful of the battle-ships, five in all, possessed by the United States, and the assurance of her passage homewards round the Horn before any declaration of war, or of open hostilities, was of supreme importance, as later on the question of neutrality in the ports where she might be forced to seek coal would probably arise. She reached Rio Janeiro on 30th April, and there received news that war had been declared on the 21st. Finally she joined the fleet at Key West in good order—a highly creditable performance to all engaged, especially to her engine-room staff. She travelled 15,000 miles without a stop, except for coaling.

A patrol squadron, "for the protection of the Atlantic coast" from Cape Delaware northwards, was formed of a couple of cruisers and half-a-dozen acquired vessels.

Admiral Sampson had succeeded Admiral Sicard (who fell into bad health) in command of the Key West ships. He started on 22nd April, the day after the declaration of war, in pursuance of orders to blockade the north coast of Cuba.

Two days afterwards Commodore Dewey was ordered from China to Manila, and entered that bay on the morning of 1st May. The Spanish fleet there lying was destroyed. Under any circumstances the American was mechanically a far superior force to that of the Spaniard, but the latter, individually as gallant as the Cid, were unprepared for war. The list of killed and wounded is convincing on this point. The

American loss is reported as 9 wounded; the Spaniards lost 381 killed and wounded, and their fleet was annihilated. Thus the safety of the American Pacific coast was assured by the sound strategy of destroying the enemy's fleet, and no fleet was deemed necessary "for the protection of our own coast."

Laden transports, under convoy, left the States early in June. Guam, in the Ladrones, was captured on the 20th, and on 13th August the city of Manila surrendered to the Army and Navy, respectively commanded by General Merritt and by the recently promoted Admiral Dewey.

Honolulu and the Hawaiian Islands were occupied and annexed on 12th August by a special force under Admiral Miller.

The organisation of the home ships into squadrons was altered as circumstances arose, before and after the destruction of Cervera's fleet, and late in July an Eastern Squadron was formed, under Commodore Watson, to move towards the coasts of Spain in case of the peace negotiations miscarrying.

On 29th April Admiral Cervera, with a nominally strong, but as we then surmised and now know an ill-found squadron, left the Cape de Verde Islands for a destination unknown to the Americans, and thereby caused an unreasoned panic on the Atlantic seaboard of the United States. On 4th May Sampson sailed from Key West, and picking up detached vessels, battle-ships, cruisers, monitors, and colliers, was off Cape Haytien on the 7th, where he was informed from Washington that Cervera's squadron was at St. Thomas, only 40 miles east of Puerto Rico. On the receipt of the news he set sail further east to San Juan, Puerto Rico, but the monitors were so unsatisfactory that it took him five days to cover the 350 miles; they could neither steer, steam, nor coal at sea; and although four new vessels of this type were estimated for in the new account, these have been either abandoned or so modified as to present a different class.

A futile bombardment, contrary to the orders of a specially efficient Navy Board, was conducted for two-and-a-half hours against the batteries of San Juan, but the troops, who ought to have consummated the attack, were absent, as ours were at Alexandria in 1882, and the Americans retired to a station off Havana, "where it was possible Cervera might have gone"—a portentous hypothesis for a naval Power to have made, possessed as it was of two of the finest sea-going scouts that the world had hitherto seen.

During the progress of his return, Sampson received information that Cervera was at Curaçao on the 14th.

The American Flying Squadron was bound to Key West, where the admiral was ordered to immediately join them. Meanwhile the "St. Louis" went to Santiago and to Ponce, in order to cut the submarine telegraph cables, and afterwards to St. Thomas for orders. Although the Secretary of the Navy Department states that the orders were duly executed, it is well known that communication was not interrupted and that it lasted to the peace.

On 17th May Sampson, while in the Bahama Channel, was informed that Cervera was carrying munitions of war to Havana, Cien-

fuegos, or to some port connected by rail with Havana. The Flying Squadron, under Commodore Schley, left Key West for Cienfuegos, and Sampson was requested to reinforce it. On 20th May the Navy Board informed the admiral that Cervera and his squadron were in Santiago, and recommended that the Flying Squadron should be detached to watch that port. On 21st May Sampson left Key West to join in the blockade, and on the 22nd the Navy Board reiterated their statement that Cervera was in Santiago. But apparently Sampson discredited the information, for he went to the east end of the island of Cuba "to prevent the approach of the Spanish squadron in that direction." On 26th May he received a letter from Schley stating his uncertainty as to the Spanish ships having quitted Cienfuegos, and expressing his intention of remaining in front of that port. Information was sent to the commodore on the 27th that the Spaniards had been in Santiago from the 19th to the 25th inclusive, and ordering him to immediately take station off that port.

Schley had discovered the impracticability of coaling at sea, and wished to enter a bay in the west end of Hayti in order to replenish the bunkers of his fighting-vessels in still water, but permission was refused. Sampson went to Key West and sent vessels to make temporary arrangements for blocking the outlet from Santiago. Many messages were interchanged between the Navy Board and Commodore Schley, all turning on the repeated affirmation that the Spanish fleet was in Santiago, and that the difficulty, if not the impossibility, of coaling at sea was very great. In the end the blockade was maintained, and on the 29th the "Cristobal Colon" was seen lying at anchor inside the entrance.

On 31st May two American battle-ships and a cruiser shelled such ships and forts as they could see, but as the range was estimated at 7,000 yards, although the fire was returned, no material damage was inflicted on either side. On 1st June Sampson arrived, and a watching "semi-circle" was formed, which threw search-lights at dark on to the harbour mouth. On 3rd June the "Merrimac" was sunk, partially, but not effectually, blocking the passage.

On the 7th the lower bay of Guantanamo, forty miles east of Santiago, was seized as a fleet refuge, and three days afterwards a splendid battalion of Marines landed, and held their position under more or less constant fire during three days and nights. The entrance fort was destroyed by shell fire from the fleet two days later.

The transports carrying the troops left Tampa on the 14th, and on the arrival of this fleet of troopers off Santiago Sampson sent his Chief of the Staff to show General Shafter, in command of the troops, the chart of Santiago; the necessity was explained of holding the batteries east and west of the entrance, before committing the ships to an attack on the embayed fleet. Shafter agreed, and troops were landed at Daiguiri by steam launches and the boats of the fleet; the landing on the 22nd was covered by shell fire from the ships on to the heights surrounding the bay. Daiguiri is a few miles east of the entrance to Santiago Harbour.

On 1st July the forts at Aguadores, near Santiago, were shelled by the fleet in consequence of a demand for co-operation from Shafter, and further demonstration was made against the forts at the entrance of Santiago itself; these forts were heavily shelled by two battle-ships throughout the following day. Sampson reported that it was an undue risk to attempt a forced passage through the mine-field known to be laid in the entrance channel until the forts at the mouth of the harbour were held, and requested that the land attack should be pushed home to enable him to drag the channel for mines.

An interview had been arranged between Sampson and Shafter for 3rd July, and to carry out the agreement Sampson, in his flag-ship, the "New York," was on that morning some six or seven miles east of his station off the mouth: he was accompanied by the destroyer "Ericsson"; and the battle-ship "Massachusetts" was also away from her station, having been detached to Guantanamo to coal.

At 9.30 on that morning the Spanish squadron was seen to be steaming out.

Cervera had started with five ships and two destroyers, and immediately he was seen the "New York" turned and made signal to "close and attack." A running fight, frequently described, continued until 1.20 p.m., by which time the Spanish squadron was destroyed. The American casualties were one killed and ten wounded, most from the drums of their ears being seriously injured by the men having unwittingly placed themselves in the line of concussion of their own guns. None of the ships were seriously damaged, but the Spaniards lost their fleet, together with 350 killed, 160 wounded; and their admiral, 70 officers, and 1,600 men taken prisoners.

During the night of 4th July, a Spanish cruiser, the "Reina Mercedes," was discovered by search-lights endeavouring to break the blockade outwards; heavy fire was opened on her from the watching ships, and she was sunk near the narrow of the entrance to the harbour. Throughout the 10th and 11th some portion of the American fleet kept constant fire on the forts by pre-arranged agreement by General Shafter and to cover the movement of his troops, who gradually worked round the head of the bay, till the encircling movement was completed on the 12th, when a truce was accepted. Considerable bickerings broke out between the heads of the land and sea forces as regards the forms of procedure, but surrender of the military position was attained by General Shafter on the 16th, acting independently of the naval commander, whose chief staff officer arrived at Army headquarters but a few minutes before the negotiations were completed. Admiral Sampson claimed to be one of the signatories to the agreement of capitulation, but the General refused his consent.

The "Maria Theresa," one of Cervera's lost squadron, was raised by a salvage company, but she was abandoned in distress by her crew whilst on a voyage to Norfolk Navy Yard, and later on drifted hopelessly ashore.

The blockade had been long and wearisome, although finally successful; as early as 27th April Sampson had exchanged shots with the coast batteries near Matanzas, and on the 29th an active war was brought about off Cienfuegos, owing to the persistent reconnaissance into that port by the American vessels. On 11th May the Americans incurred twelve casualties whilst engaged in cable-cutting off the same harbour, and on the same date several small vessels were badly mauled off Cardenas whilst counter-mining in the harbour mouth; but eventually the place was abandoned, and the American flag was hoisted in Cuba for the first time during the war.

On 13th June fire was exchanged at Cienfuegos, and on the 15th Guantanamo was seized after bombardment by the fleet. On 22nd June the "St. Paul" drove two small craft back with loss into San Juan, and on the 29th two converted traders shelled a body of Spanish cavalry near the mouth of the Rio Hondo. On 30th June three small vessels shelled the field batteries and troops who showed themselves on the high ground near Manzanillo, and then turned their fire on the gun-boats sheltering in the harbour, and the fight was renewed indecisively the following day. The "Alfonso XII." was destroyed off Port Mariel, west of Havana, on 5th July, and a week later the "Santo Domingo" was captured and destroyed at the Isle of Pines. The "Annapolis" shelled the Barraçoa batteries on 15th July; on the 18th the gun-boats in Manzanillo were destroyed, although protected by fire from land batteries, at the same time the "Jorge Juan" was sunk in the Bay of Nipe. On 12th August Manzanillo was summoned to surrender, and on refusal being sent the place was bombarded, but the armistice was declared the following day.

Puerto Rico was blockaded early in the war, but it was not till 28th July that Ponce surrendered; four days later Arroyo yielded, and on 6th August a landing party seized the lighthouse at Cape San Juan, and held their ground against a serious night attack.

A fine battalion of Marines, 650 strong, landed at Guantanamo on 10th June, and was constantly attacked till the 14th; they were excellent troops and lost no men by disease, and had few sick, although they were much exposed in a semi-tropical country till a few days before the truce.

Four thousand men were taken into the Navy from the Naval States Militia, and did good service on board cruisers and monitors. 2,362 men manned 36 signal stations throughout the coast from Maine to Texas. They were duly trained in the international code, the night code, and in "wig-wagging," as the Americans call their edition of hand flag signalling.

One hundred and two subsidiary vessels were bought outright with part of the moiety that was allotted to the Navy of the original ten million sterling vote. The prices ranged from £285,853 for the Brazilian cruiser "Amazonas," built at Elswick, to £560, the cost of lighter No. 18. Twenty-six vessels were chartered, mostly with their complete crews. The "St. Paul" and the "St. Louis" received £500 per diem, and the

Philadelphia ice-boat "Arctic" was paid one dollar for the whole period of the war, and two yachts were lent without payment.

Prior to the outbreak of the war, the Navy employed 12,500 men; at the truce that number was doubled; 225 officers were called up for temporary service, and were employed on such duties as their physical condition justified, and the services of 856 volunteer officers, including surgeons, were accepted.

The coal purchased during the war cost £400,000 (three times more than the normal yearly consumption), and 17 large steamers were used as colliers for the fleet.

A large vessel, the "Vulcan," costing £70,000, was fitted as a travelling store and workshop; her artificers completed repairs for 63 ships, and supplied stores to 60. The Navy Board recommend the immediate preparation of a second vessel of the same class.

Water-tube boilers are unreservedly praised for war-ships, and for the same reasons that influence our own Admiralty. The "Iris" was fitted as a distilling-ship, and, when finished, she was capable of evaporating 60,000 gallons a day; but she was hardly completed before the armistice, and a second vessel of the same class is in process of conversion.

The Bureau of Ordnance was severely strained in providing armaments and warlike stores for the enormous improvised addition to the Navy, and the demand for mining outfits and stores, for harbour defence, added to the difficulty; smokeless powder was not generally available, and the Bureau report strongly in favour of the extended employment of electricity as being "an ideal power" on board ship.

The naval casualties were 18 killed and 66 wounded in all, and the amount of money voted under three heads to the Navy was nearly ten million sterling, of which half was actually expended, at the time of the armistice.

A paragraph of the report is of more than local interest, and runs as follows:—

"It has been the policy of the Administration to give preference (for employment as labourers and mechanics in the Navy yards) to those persons who served in the military or naval service during the Civil War. The same preference will be given to persons who served in the Spanish-American war. Those who served in foreign waters or on foreign soil will be accorded preference as veterans; and those who served in the United States or its waters, who did not reach the front, will be given preference next after veterans, provided, of course, that as a preliminary to registration they present an honourable discharge."

The Government of the United States were unable to foresee the extent of the war in which they were entering, and, as under any circumstances, maritime operations would surely prove to be the dominating factor, they wisely organised a Naval War Board, consisting of a trinity of very able men. The president of the Board was Admiral Sicard (whose health for sea service had unfortunately failed before the outbreak of hostilities), with Captain Crowninshield and Captain Mahan as co-adjutors.

"The Board was charged with delicate and most important duties, and yet the Department is not aware of an error in its performance of them."

This is a worthy ending to the report of a war, conducted successfully under circumstances of great difficulty. Climate and season were unpropitious, and the officials lacked experience in the conduct of so great an undertaking as the over-sea transport in large numbers of men but lately organised for service. Having regard to the world development of the United States, some central Board seems to be necessary to ensure that harmonious working between land and sea forces of a Power whose success can in future not be assured without an intertwining of direction such as we have found to be necessary.

THE TRANS-SIBERIAN RAILWAY.

By Lieut.-Colonel C. E. de la POER BERESFORD, p.s.c.,
Military Attaché at St. Petersburg.

HIS Majesty the Emperor Nicholas Alexandrovitch laid the first rail of the Trans-Siberian during his visit to Vladivostock, at the time of his memorable journey to the East, some seven years ago. The projected railway, starting from both ends simultaneously, was to meet at Irkutsk. Subsequent events, with which I am not here concerned, caused a modification of this scheme. The section from the extreme east was finished, as far as Kharbarovka, at the junction of the rivers Ussuri and Amur. It has been in working order for some years, and was used quite lately by Prince Henry of Prussia on his journey to Blagoviechensk. To this town, and beyond it to Albazin, steamers ply in summer up the Amur. They also descend this capricious stream to Nicholaievsk. Settlers from Russia have located themselves along the Ussuri railway, but they do not seem to have been as prosperous as might have been expected; for since 1894 both their numbers and the area of ground under cultivation have sensibly diminished. The railway was to have been continued, avoiding, as far as possible, the dangers of the Amur valley and its terrible inundations, past Chernayeva and Albazin, to Strietinsk. It was actually laid down from Strietinsk to Mitrophanov, but in 1897 a fearful flood carried away the whole line, 300 versts in length, and did damage to the amount of £600,000. The work had to be recommenced, and only 110 versts were relaid by the end of last year. It is unlikely that this line will be continued. A new direction has been imposed by events upon the eastern portion of the great line. Surveys are now in progress with a view to running the iron-horse through Manchuria. Such a line might cross the Russo-Chinese frontier near Aksha, or Abagatouie, north of the Dalai-Nor. Although I cannot state certainly where this railway will pass, yet I know that it is now partially constructed. As a consequence, communications will probably be thus for the present arranged in the Trans-Baikal district. The railway from Chita will be connected with steam-boat traffic at Strietinsk, on the Schilka, or Ibash-China, on the Amur river; and the main line will run from Chita to the frontier station, and probably past Tzizichar, Kirin, and Moukden, with a loop to Vladivostock, to the coast at Port Arthur.

It is more interesting to turn from the line *in posse* to that *in esse*. Trains now run from St. Petersburg to Irkutsk, with two breaks only, at Krasnoyarsk and Zimensk, where the bridges over the Yenesei and Oka

are still unfinished. The bridge over the Ob or Obi river at Ob-Krivoshchekovo, is completed. It is a magnificent structure, which does the greatest credit to the Russian engineer. It towers 80 feet above the river in ordinary times, and 50 feet above its raging waters when in flood. Its length is 900 yards, and it cost £220,000. All the bridges are the same in type, if of iron. They carry a single line, through girder lattice work, over spans varying in length from 100 yards downwards. The piers are of stone. I sent a photograph of one of them to the *British Realm*, to accompany an article of mine which appeared in the August issue of that paper. It might serve as a type of all these Siberian bridges. For the smaller streams the timber, which is so plentiful in Central Siberia, has been utilised. Anyone who knows the clever work of the Russian carpenter can imagine that they are marvels of ingenious construction.

The total distance from St. Petersburg to Irkutsk is about 3,500 miles. From Cheliabinsk, in the province of Orenburg, where the line hooks on to the Samara-Zlatoost line, to Irkutsk is 3,053 versts, or almost exactly 1,910 miles. This distance of 3,500 miles then, with the exception of the gaps at the two rivers mentioned, is actually laid down. Trains now run as far as Ob-Krivoshchekovo without a break. Most luxurious they are, with well-warmed carriages, bath, library, gymnasium, and restaurant. These trains only start twice a month, and the ordinary trains are not so comfortable; but the whole line is as yet in an embryo state, and must not be too severely criticised. The passage of the rivers Yenesei and Oka by boat, for instance, is far from comfortable in cold weather; and the trains at the other side of the bridge at Krasnoyarsk are not equal to that which starts from the capital; yet is a mighty thing to have accomplished this line even so far as Irkutsk. Commencing from the western end the line was worked at in three sections simultaneously. First, from Cheliabinsk to Omsk, a distance of 741 versts; secondly, from Omsk to Krivoshchekovo, 585 versts; and thirdly, from Krivoshchekovo to Irkutsk, the Mid-Siberian line, 1,730 versts. Perhaps it will be better to take these sections *seriatim*, and to endeavour to describe them and the country they cross in detail.

The first section passes through the vast and dreary province of Akmolinsk, traversing the basins of the Ishim and Irtish, those mighty tributaries of the still greater Ob, or, as we say, Obi, river. The Akmolinsk province stretches southward as far as the shores of Lake Balkash, and the confines of Syr-Daria. Of all the dreary, sun-baked, desolate districts of the world, this is the most dreary. Inhabited by nomadic Kirgese its total population is only half a million, which gives a proportion of about 1 per square mile! It contains little but the flocks of the Kirgese, and a few sand-grouse, at which they fly their famous falcons. In its southern extremity lie the vast "Hunger Steppes," whose name sufficiently indicates their character. Woe to the luckless Kirgess whose horse fails him in these desolate regions! He may give himself up as a prey to the sand which has buried a hundred once flourishing towns left in ruins by Tamerlane. Even the water here is salt and

presents difficulties to the engineer. It, or rather the want of it, caused considerable delays in the construction of this section. The tanks in which it is stored are frozen in winter, and to thaw them continual fires must be kept burning. To provide the fuel for this alone will not be easy in this treeless land. It is true that the railway avoids the worst part of this province, and from Petropavlovsk, on the Irtish, to Omsk, closely follows the old caravan road, from the East to Tiomen and Perm. This portion of the railway is the least cheering, and very unfavourably impresses the traveller. But it is only the *entr'acte*, so to speak, between Europe and Asia; and, after Omsk, the curtain lifts upon a far more smiling picture.

The second section, from Omsk to the Obi river, leaves the great Baraba steppe to the north. The district which it traverses is, as natural in the basins of two such vast streams as the Irtish and the Obi, well watered. It contains numerous lakes, and is considerably more indented than the monotonous plains of Akmolinsk. At present the population of this country is chiefly composed of fishermen and trappers, but agriculture, it is hoped, will be its future. The train is now in the flourishing province of Tomsk, whose chief town is second only in name to Tobolsk, the capital of the Government; and far superior to it in position, resources, and population. Here the under-features of the distant Altai chain sink slowly into the plain, and from their gentle elevations course down many streams. It is to this district, less hilly than that of Irkutsk, less desert than that of Akmolinsk, that the Russian Government hopes to draw many settlers.[1] During the year 1897-8 no less than 200,000 emigrants have passed eastwards over the Siberian railway. Some of these will be successful, some again are destined neither to succeed nor return; whilst a third portion will find their way back to Russia, aided by the charity of no one knows whom. The most conflicting accounts are in circulation as to the fate of the emigrants from Russia to Siberia. This country is represented by some as a land flowing with milk and honey; by others it is painted in the gloomiest colours. It is pretty certain that the wheat-growing area of this district will be enormously increased by the railway. As the cornfields already existing begin to fail, the steppe and forest-land will be broken up, to smile with golden grain. Once the land in the immediate vicinity of the trunk-line is exhausted, new branch-lines will become necessary to "tap" the country. The communications at present are very defective, and the energy of the Siberian peasant does not promise much improvement in the way of road-making. But that the fertility of this province is no chimera, is proved by the fact that since the first train ran into Irkutsk, some two months ago, more than 3,000 tons of wheat and oats have been carried there by the railway from the Tomsk district. As a consequence, the price of wheat at Irkutsk has fallen from 2 roubles 30 kopecks to 1 rouble 30 kopecks per Russian pood of 36 lbs. avoirdupois. The price of oats, in like manner, has

[1] Up to November, 1898, 179,000 immigrants have this year entered Siberia, of which 2,000 passed *viâ* Tiomen, the rest by Cheliabinsk.—C. E. D. B.

declined from 1 rouble 80 kopecks to 80 kopecks per pood. For the uninitiated it may be mentioned that 100 kopecks go to the rouble, and the value of a kopeck is almost exactly one farthing.

In view of the proximate necessity of bringing the grain to the consumer, and the consumer to the grain, and of providing against the evils likely to arise from a considerable immigration into a new country productive alike of grain and minerals, the Russian Government is making wide-spreading and complete arrangements. The Ministry of the Interior will have to provide for the colonisation of these vast regions, to augment the number of fairs and markets, to improve the postal service, and to organise a body of police. To the Ministry of Agriculture will fall a still more considerable task. The agricultural wants of the country must be considered, the best manner of developing the rural districts, the instruction of the colonists, many of them ignorant of Nature and her ways; the creation of model farms in various localities; and finally the improvement and development of the much neglected mineral industry. The Ministry of Public Instruction will institute primary and secondary schools, and to various other Government departments will the following improvements be assigned, viz., construction and development of steam-communications on the rivers, reform of the system of taxation, and the general development of credit in the region. Good and charitable souls are already collecting money to build churches, which will serve as centres round which the huts of the peasantry will arise. The latter will thus be provided with that religious care and supervision which is so striking a feature of life in the provinces of European Russia. The Ministry of Ways and Communications is studying the question of the provision of light railways,[1] similar to those which have been so successful in Ireland, with a view to finding an easy market for local products, as otherwise only a small portion of this vast country would derive appreciable benefit from the railway. The existing river steamboat companies already do much in this way, but their number is not sufficient, and as a rule the rivers are far from the regions richest in mineral wealth. The vast forests which lie far from the line of the Trans-Siberian, must also be drawn upon, not only for smelting purposes in the mining industry, but also to provide fuel for domestic use in European Russia; where, bountiful as Nature has been in this respect, her resources are beginning to show signs of exhaustion. In Western Siberia, the treeless district before mentioned, the price of wood is exorbitant—running to 12 or even 18 roubles the cubic *sâjène*, or double the price current in St. Petersburg. The first light railways will be laid down in the mining districts. One has already been constructed from the station of Soujenko to a private coal-mine. It is thus hoped that coal will be brought to the Trans-Siberian in such quantities as to replace wood, which is at present the only fuel used on the railway; and that a considerable economy in the working expenses of the line will thus be possible.

[1] The rails which have been laid on the permanent-way of the Trans-Siberian have been found too light for safety. They will be replaced by heavier rails, and will themselves serve for branch light lines.—C. E. D. G.

The third section of the line, the Mid-Siberian Railway, from Krivoshchekovo to Irkutsk, only just completed, which the Yenesei and Oka still rush through unspanned, enters a delightful and interesting country. It is scarcely exaggeration to say that a Switzerland here succeeds a Sahara; though the Tomsk province rather resembles the uninteresting though fertile plains of Manitoba, than the African desert. Here we enter the basins of two of the most gigantic of the earth's water-courses, fit to be mentioned in a breath with the Nile or Amazon. I allude to the Yenesei and the Lena, streams thousands of miles long, which, rising in the snows of the mighty mountains that separate Siberia from the vast Central Asian deserts, rush turbulently to the frozen ocean. At Krasnoyarsk—where the Yenesei has only traversed one-fifth of the distance which separates its cradle in the serrated peaks of Munku Sardik, from its grave in the Kara Sea—the bridge is nearly half-a-mile across. It is raised high above the water-level to keep the permanent way secure from the rushing floods which course down from the Sayanisch chain at the melting of the snows. This bridge cannot well be completed until the autumn of 1899, for it is impossible to work in the caissons during the severe winter which here prevails. The upper basin of the Yenesei is a district cut into a thousand valleys by the tributaries of the great river, which score and excavate the country into many valleys, bright with green pastures dotted with magnificent timber, and full of fur and feather. From here come the fox and the sable, whose glistening skins show to such advantage at Lelianoff's or Marten's in St. Petersburg. At Atcheensk, Kansk, and Minnosinsk, all within reasonable distance of Krasnoyarsk, is found the gold which provides the settings for the masterpieces which lie hidden behind Faberjè's jealous screens in the great Morskaia; and the spruce and larch will feed the smelting furnaces or provide struts and supports for the galleries in coal-mines hidden as yet in earth's recesses. The railway crosses no less than six important bridges between Krasnoyarsk and Irkutsk. In this section considerable tracts of marshy country have to be dealt with, and the rapidity of the construction of the line has not allowed sufficient time to form in all places a sufficiently solid foundation for the sleepers. The comfort, not to say safety, of the journey here still leaves much to be desired.

To recapitulate: The Trans-Siberian joins the European system at Cheliabinsk, which is 2,060 versts from Moscow. It crosses the whole of West Siberia. It was surveyed and partially constructed, through East Siberia as far as Vladivostock. The total length was to have been 7,112 versts. The direction of the portion of Chita eastwards has been changed, and the Ussuri line will probably not, for the present, at all events, be extended. From Cheliabinsk to Ob-Krivoshchekovo the line is called the West Siberian Railway. Trains start from the former place every Sunday, Tuesday, and Thursday, and are supposed to arrive at Ob in sixty-one hours. (?) There are buffets where tea, coffee, wine, beer, and *vodka*, beside hot dishes *à la carte*, are sold, at Cheliabinsk, Choumika, Koorgan, Makouchino, Petropavlovsk, Issil-kool, Omsk, Tatarskaia, Kainsk, Tschoolim, and Krivoshchekovo. The charge for luggage is

about six kopecks per pood (36 lbs.). From Krivoshchekovo to Irkutsk, the Central Siberian line is not so completely organised, but there are buffets at Bolotnaya, Taiga, Mariensk, Bogotol, Atcheensk, Krasnoyarsk; and food can be obtained in a roughish way at Nishni-Udinsk and Zimensk. Beyond Irkutsk the only line actually working is the Ussuri line, on which between Vladivostock and Mir Amurski there are refreshment rooms at Nadeshneskaya, Nikolskoe Spasskaya and Ussuri, besides at the termini.

Much might be written about the existing modes of communication in Yakoutsk and the East Siberian districts; of the dogs and the reindeer of the Yakouts and the Toungus; but it is not pertinent to the matter in hand. The question as to the construction of the existing line is more to the point. It is true that in Russia the public is content with a railway service which would not at all satisfy the requirements of Western Europe. It would be impossible to run heavy and continuous trains over the existing Russian lines. And far less would such traffic be possible on the Trans-Siberian line as at present constructed. The rails must be heavier, the sleepers made of better wood than soft fir; and they must be securely ballasted. It will probably be necessary to re-lay a great portion of this line, but doubtless the rails on hand at present would be useful enough for the construction of light railways, radiating from the Great Trunk line. There can be no doubt that great benefits will result to civilisation from the construction of the Trans-Siberian. As to the strategic value of the railway, it will no doubt be considerable. Russia, naturally enough, wanted to join her port or ports on the Pacific with the heart of the Empire. But to imagine that the movement of large bodies of troops for so vast a distance, by a single line of rail is an easy matter, or indeed any but a matter of huge difficulty, is to show a very imperfect knowledge of the history of the movement of troops by this means. British energy should rather be directed to obtaining orders for the iron rails, which will have to be purchased somewhere, in all probability very soon; than to cavilling and carping at a railway extension, which, after all, Britons can have no right to object to; and the completion of which will be hailed with delight by all whose motto is *Aperire terram gentibus.*

THE INTER-OCEANIC CANAL.

By Captain CECIL B. LEVITA, R.A.

A DIRECT outcome of the recent American-Spanish war is the contemplated construction of a canal across the isthmus separating the Atlantic and Pacific Oceans. That this waterway, several times ineffectually attempted, will be effectively constructed by the United States cannot be doubted. The voyage of the "Oregon," although a splendid triumph for American engineers and shipbuilders, would, in the face of a more active and calculating foe than Spain, have probably ended in disaster.

America recognises that her fleet must be available in either ocean as may be required, and that trade facilities must be made. President McKinley voiced public opinion in America recently when in his Message he stated :—"The construction [of an inter-oceanic canal through Nicaragua] is now more than ever indispensable, and our policy more imperatively than ever calls for its control by this country. I do not doubt that Congress appreciates this."

To England, as the greatest maritime Power, the building of this canal must prove of vast importance. She needs every waterway that can be opened for her, both in peace and in war. Reference to the Suez Canal is unnecessary in support of such axioms of England's welfare, but it may be pointed out that the isthmus lies direct between our Australian colonies and the mother country. Moreover, it must not be forgotten that the strategic value of the Canadian-Pacific Railroad has not been increased by the positions recently acquired by the Russians and Germans at Port Arthur and Kiau-Chau respectively, and that every improvement of communications giving access to the East is most desirable.

A late Secretary of State for the United States some months ago said to the writer of these lines, that not only would a canal be made, but that the States could and would make it without any external assistance. Now at present there exists a treaty, known as the Clayton-Bulwer Treaty (made in April, 1850), between Great Britain and the United States of America. Divergent views are held in the States as to whether this treaty is still binding, on account of alleged English infringements of the same.

To briefly examine the treaty, we find that it is as follows (*vide* Vol. XXXVIII. British and Foreign State Papers):—

Art. I. The Governments of Great Britain and the United States hereby declare that neither the one nor the other will ever obtain or maintain for itself any exclusive control over the said ship canal; agreeing that neither will ever erect or maintain any fortifications commanding the same, or in the vicinity thereof, or occupy, or fortify, or colonise, or assume, or exercise any dominion over Nicaragua, Costa Rica, the Mosquito Coast, or any part of Central America, etc., etc.

Art. II. arranges that in time of war the ships of either country are "exempted from blockade, detention, or capture."

Art. III. defines that the construction of the canal is to be under the protection of the two parties to the treaty.

By *Art. IV.* both Governments were to facilitate the construction as most expedient, and maintain free ports at each end of the canal.

In *Art. V.* both Governments are to protect the canal when made, and guarantee its neutrality.

Beyond these articles come four more, but they merely elaborate the main idea.

Now it is claimed that this treaty was actually a compact made for a valuable consideration, and, that if either party defaulted, the agreement would then become terminable at the option of the injured party. If both parties kept to their contract, then the treaty was to be perpetually binding.

The American view is that, about the time Sir Henry Bulwer and Mr. Clayton, respectively British Minister and U.S. Secretary of State, were conducting their negotiations, England was extending her sphere of influence on the northern coast of Central America. It was an American fear that England's actions threatened a gradual total absorption of these regions between the boundaries of Colombia and Mexico. Therefore, thinking that English possessions in the New World already were too large, and being resolved, as she is to-day, that in case of conflict she would force England to withdraw entirely from the continent, the United States objected to our action. To avoid a second British America, on the mainland south of the Caribbean Sea, Mr. Clayton agreed that Great Britain should share with the United States the control of any canal made on this isthmus, provided that, for this concession, Great Britain would cease from extending in these parts, and pledge herself not to annex any part of Central America.

So the treaty came into existence and was signed. Afterwards Sir Henry Bulwer and Mr. Clayton exchanged notes about the position of the British subjects in the neighbourhood of Belize. There people had had timber-cutting rights from times immemorial, or ever since they had been there. Spain originally probably granted these rights, the various succeeding republics had continued them, and Sir Henry was of opinion that they still existed. Mr. Clayton, independent of the text of the treaty, concurred. During the progress of the Civil War, that raged subsequently in the States, it is asserted that Great Britain transformed the

settlement of wood-cutters into a British Crown Colony. As a Crown Colony, Belize, or British Honduras, blossomed forth into various rights, and, not content with the valuable mahogany and logwood forests in its own limits, managed to expand into Guatemala, until it now covers some 14,000 square miles. This is an American view of the infringement, and consequent possible rendering void of the Bulwer-Clayton Treaty.

Mr. Frelinghuysen afterwards became Secretary of State for the United States, and was of opinion that these transgressions rendered it possible for the States to free themselves at will from the treaty, and gave formal notice to that effect to the British Foreign Office.

President Cleveland apparently did not take this extreme view, as his Secretary of State wrote twice in official despatches as if the treat was still operative. But in 1881 Mr. Blaine wrote that:—"The United States would claim with the Columbian Government the exclusive control of the Canal." He further said any combination of European Powers which neutralised it would be regarded by the States as "indication of unfriendly feeling." Mr. Blaine also wrote:—"As Great Britain insists, by the right of her power, that her enemies in war shall strike her Indian possessions only by doubling the Cape of Good Hope, so the Government of the United States will equally insist that the interior, more speedy, and safer route of the Canal shall be reserved for ourselves, while our enemies, if we shall ever be so unfortunate as to have any, shall be remanded to the voyage around Cape Horn."

Undoubtedly the questions involved by this treaty have been the subject of considerable diplomatic correspondence, and there is more to come. Various American politicians have challenged its binding effect, and their views will have to be taken into consideration. Public opinion in the United States is fairly agreed that their Government must, diplomatically or otherwise, settle the question before commencing work on the Canal, and obtain an abrogation of the treaty. Senator Morgan heads a class of men who are quite impatient of anything of the nature of foreign control in American affairs, such as they consider these, and has prepared a Bill on the Canal scheme to that effect. He declares for the absolute neutrality of the Canal, but requires it to be built and controlled by his own nation.

Much has been heard of late of an Anglo-Saxon alliance, and many expressions of mutual good-will have been made by leading men on both sides of the water. But America has shown herself to be controlled by other than her leading men, and the "Hayseeds from the West," as they are facetiously termed by the Eastern States, to a very large extent forced war on Spain in opposition to the expressed views of the leading men, and are a class that ever preach that America is for the Americans. The good-will to England is in very many parts but mere veneer, and expressions that England has everything to gain and America nothing are plentiful amongst the masses. The Anglo-Saxon alliance is at present a not too hardy growth of sentiment, and is not a sufficiently popular sentiment to encourage the idea that America will give what she fancies is substance for shadow.

So we are brought to consider several possibilities: firstly, that America may fully abide by the treaty and work with us; secondly, that she may but partially do so; thirdly, that she will claim an abrogation of the treaty.

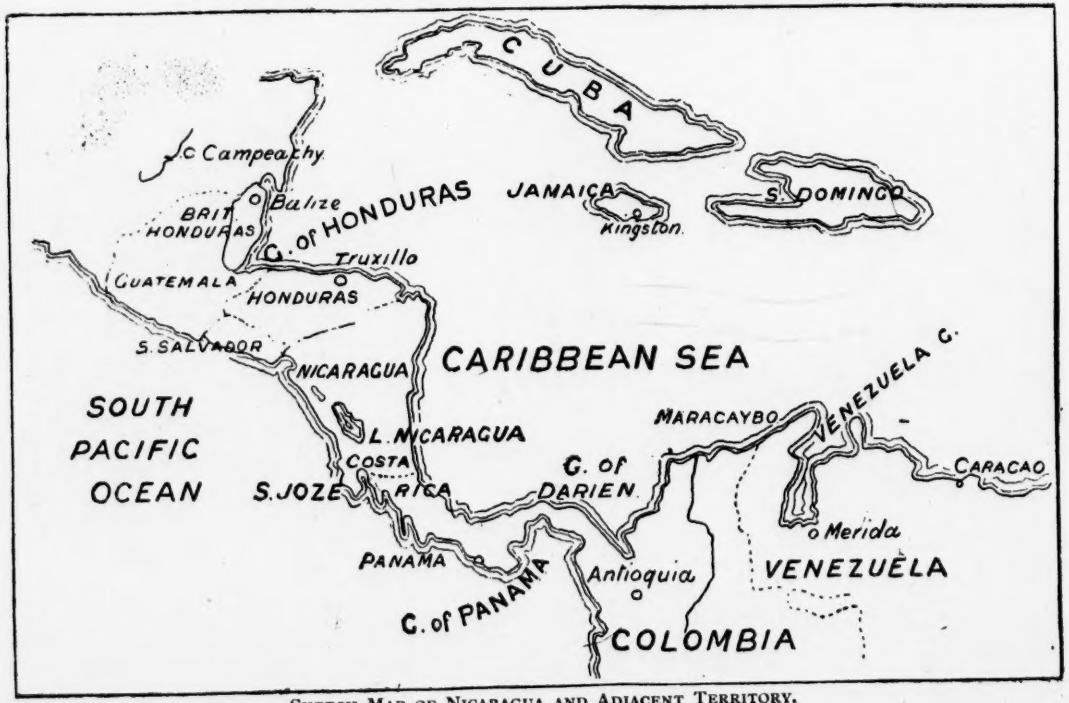
Evidently the first case is the most desirable for British interests both in peace and in war. The second appears to-day the most probable solution, and is one that in war will entail absolute neutrality of the Canal to all Powers alike. The third case is possible and strategically resembles the second, but would be a blow to our prestige and friendship.

The decision must perforce be left to the good sense and discretion of the American Government, but in any case we may bark but we cannot and must not bite. It is possible that unless we take the initiative and abrogate the treaty of our own volition, that the budding Anglo-Saxon alliance may receive a shaking that its too feeble roots may not be able to withstand.

When comparatively recently France made a proposition for the neutrality of the Canal, she asked what most suits the popular American fancy. England, however, objected on the grounds that in war-time she would not be able to use the Canal, that is to say, when she most requires it. England requires dual control and ownership in some form. The question is, Will she get it? and further, Is she prepared to put up the necessary money? If she fails so to do, the advantage of the treaty being in any way recognised is hard to perceive. If we are at war with any Power, other than America, we shall be on an equal footing of neutrality with that Power, plus the Canadian Pacific Railway. If we are at war with the United States, evidently we could make no use of the Canal, and should have forfeited any precuniary position that we possessed. War with the United States would mean an invasion of Canada, as the States, with their approximately 60 millions more population than Canada, would start in to remove the last remaining European flag from the continent.

Our retaliation would lie in driving her shipping off the sea and harassing her coasts. With the present inadequate and incompetent Canadian defence and Militia arrangements, there can be little doubt that the outlook would be serious. As a matter of interest and but known to few, it is noteworthy that had the Venezuelan affair proceeded to its full possibilities, three columns would have been launched into Canada: one to seize the canals giving access to the St. Lawrence, one through the State of Maine to cut the railways, and the third to the west near Medicine Hat. The existence of a Nicaragua Canal under dual control would not, and never could, then avail us, although of great value to our adversaries. That must be recognised; but we need not, it is sincerely to be hoped, ever recognise the United States as adversaries except in commerce.

We are not in a position to forbid or command the construction of the Canal, no matter how great a strategic disadvantage it may become. Are we in a position to insist that it shall be of any value to us in case of war with nations other than our American cousins?



SKETCH MAP OF NICARAGUA AND ADJACENT TERRITORY.

In the present state of affairs it looks as if we are not, and that the United States will elect to do what they think to be their own work unaided, and by absolute neutrality treat all nations alike. Therefore, there is wisdom in the counsel that the British Government shall *propose* a new treaty in lieu of the old, allowing no Power but America to make or control the Canal, and to maintain its inviolate neutrality.

Probably negotiations are at present being quietly conducted between the United States, Nicaragua, and Costa Rica, to obtain their consent. If this can be verified, Great Britain will obtain thus a sign of "which way the wind is blowing."

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Vice-Admiral—Sir H. H. Rawson, K.C.B., to Command of Channel Squadron. Captains—A. L. Winsloe to "Niobe"; A. C. Corry to "Hood."

Vice-Admiral Sir H. Stephenson, K.C.B., having been compelled by continued ill-health to resign the command of the Channel Squadron, struck his flag on board the "Majestic" at Portsmouth at sunset on the 19th ult.; his successor, Vice-Admiral Sir H. H. Rawson, K.C.B., hoisted his flag on board the "Majestic" the following morning. Captain H. S. H. Prince Louis of Battenberg will retain the appointment of Flag-Captain to Vice-Admiral Rawson for the present. The Reserve Squadron still remains mobilised, Portland remaining its headquarters; the second half of the Coast-Guard Reserve has been called up to relieve the men of the first half at present serving on board the ships. The third-class cruiser "Philomel" commissioned at Devonport on the 1st ult. for service on the Cape and West Coast of Africa station; she left on the 14th ult. for her destination, where she will relieve the "Phœbe," a sister-ship. The first-class cruiser "Blake" paid off at Devonport on the 5th ult., her officers and crew turning over to the new first-class cruiser "Niobe," on which ship the pennant was hoisted on the 6th ult.; on her three hours' commissioning full-speed trial the "Niobe" averaged a speed of 20·5 knots. The first-class crusier "Diadem" made a record passage last month from Gibraltar to the Nore, accomplishing the run home in three days, averaging 19·2 knots an hour, the engines developing 14,200-I.H.P., with a coal consumption for all purposes of 2·1 lbs. per hour per H.P., while during the first eight hours the H.P. developed was 17,100; this is an exceptionally good record, as the ship had not been in dock for six months, and was weedy all about the water-line, while from the time of starting until the Nore was reached the engines were not eased once. The second-class cruiser "Astræa" from the Mediterranean paid off at Devonport on the 5th ult., and her sister-ship the "Forte" from the same station paid off at Chatham on the 15th ult. The third-class cruiser "Cordelia" from the North American station paid off at Portsmouth on the 14th ult., and the third-class cruiser "Scout" from the Mediterranean paid off at the same port on the 19th ult. The sloop "Buzzard" left Devonport for the West Indies on the 15th ult., where she will relieve the sloop "Pelican."

Steam Trials.—The new first-class cruiser "Andromeda" has been continuing her trials successfully. On her 30 hours' trial at 12,500-I.H.P., the following results were obtained:—Steam in boilers, 266 lbs.; vacuum in condensers—25·1 starboard, 27 port; revolutions per minute—107·8 starboard, 106·4 port; I.H.P., 6,239 starboard, 6,382 port—total, 12,621; coal consumption, 1·74 lbs. per I.H.P. per hour. Although the mean speed of the 30 hours' run was not taken, the purpose of the trial being principally for coal consumption, yet four runs were made on the measured mile, when a mean rate of 19·3 knots was recorded. A heavy sea was running throughout the trials, but no single hitch occurred, either with the engines or the boilers. On the eight hours' run at full speed, the results

were as follows:—Draught of water—24 feet 3 inches forward, 26 feet 3 inches aft; steam in boilers, 285 lbs., and at the engines, 245 lbs.; vacuum, 26½ inches on both sides; the mean I.H.P. was 16,781, which produced 118·8 revolutions starboard, and 115·6 port; the mean speed of the four runs on the measured distance was 20·41 knots; while the coal consumption was only 1·76 lbs. per unit of power per hour.

The new first-class cruiser "Argonaut" has also successfully concluded her trials. On the 30 hours' trial under natural draught the following results were obtained:—I.H.P., 13,800; speed, 19·6 knots; coal consumption, 1·8 lbs. per H.P. per hour. At her 30 hours' coal-consumption trial, at 3,600-I.H.P., the results were as follows:—Draught of water—24 feet 3 inches forward, 26 feet 3 inches aft; speed of ship, 13·3 knots; steam pressure in boilers, 258 lbs. per square inch; vacuum in condensers—25·8 starboard, 26·2 port; revolutions per minute—75·5 starboard, 76·3 port; mean I.H.P., 1,922 starboard, 1,893 port—total, 3,815; coal consumption, 232,050 lbs., or 2·02 lbs. per I.H.P., per hour.

The "Albatross," a new type of torpedo-boat destroyer, has made a successful preliminary trial of her machinery. The vessel has been built by Messrs. J. I. Thornycroft and Co., of Chiswick, to the order of the Admiralty. She is larger than any destroyer yet built for the British Navy, except the "Express," which was constructed at Birkenhead and is now in course of completion. The "Albatross" is 227 feet long by 21 feet 3 inches beam, and 14 feet deep. The armament consists of one 12-pounder Q.F. gun, mounted on the conning-tower, and five 6-pounder Q.F. guns. There are two torpedo-tubes on deck for 18-inch torpedoes. The machinery consists of two sets of four crank triple-compound engines, supplied with steam by four Thornycroft water-tube boilers; and her H.P. with forced draught is 7,500. At the trial made in squally weather, the mean speed of runs on the measured Maplin mile was 31·259 knots. The steam pressure was 240 lbs. to the square inch, the vacuum 25 inches, and the revolutions averaged 388 per minute. The guaranteed speed is 32 knots with 40 tons dead weight on board.

The torpedo-boat destroyer "Bittern" has completed her official three hours' coal-consumption trial. Her engines indicated 6,400-H.P., with a speed of 30·364 knots.

The torpedo-boat destroyer "Flirt," the eighth 30-knot vessel delivered at Portsmouth by Palmer's Shipbuilding Company, has had her first three hours' speed trial. With 245 lbs. of steam at the boilers, she developed 6,468-I.H.P., which gave her 400½ revolutions and a speed of 30·009 knots. The weather was hazy, and the trial was run in shoal water.

The torpedo-boat destroyer "Coquette," built by Messrs. Thornycroft and Co., has had her three hours' trial. The results, which were satisfactory, were as follows:—Draught of water—6 feet forward, 7 feet ¾ inch aft; speed of ship, 30·371 knots; steam pressure in boilers, 215 lbs. per square inch; air pressure in stokeholds, 2·8 inches; vacuum in condensers—26·5 starboard, 24·4 port; revolutions per minute—387·4 starboard, 380·4 port; mean I.H.P., 2,888 starboard, 2,852 port—total, 5,740.

The torpedo-gunboat "Sheldrake," which has been fitted with the Babcock and Wilcox type of water-tube boilers, has had two further steam trials recently. On her eight hours' trial the engines developed a mean of 2,600-H.P., and the boilers showed a mean steam pressure of 145 lbs., the speed attained being 18 knots. On her three hours' full-power trial, the mean results were an I.H.P. of 4,050, a speed of 20½ knots, and coal consumption of 1½ lbs. per I.H.P. per hour. The boilers worked satisfactorily on both trips.

New Sloops.—The Admiralty have placed with Laird Brothers, of Birkenhead, an order for two twin-screw sloops, to be called the "Mutine" and the "Rinaldo."

Although slightly larger than the "Condor" and the "Rosario," building at Sheerness, they will be built on similar lines, whilst the equipment as regards armament, etc., will be identical. Their dimensions will be:—Length, 180 feet; beam, 32 feet 6 inches; mean load draught, 12 feet; displacement, 980 tons. They will be fitted with water-tube boilers capable of driving the engines at 1,100-I.H.P., with natural draught, and at 1,400 with forced draught, while their respective speeds will be 12·6 and 13·25 knots. Their armament will consist of six 4-inch and four 3-pounder Q.F. guns, and four Maxim machine guns. The collective cost of the two vessels equipped for sea will be £130,000, and every endeavour will be made to complete them both for commissioning by December next. They will be rigged with two masts, on each of which, at a height of about 20 feet from the deck, platforms will be fitted for the mounting of machine guns, so that with their light draught they will prove invaluable for river duty.

Target Practice at a Torpedo-boat.—It may be remembered that some time since torpedo-boat No. 28 stranded in Kalk Bay, South Africa. She was floated, but found to be so much damaged as to be not worth repair. With the permission of the Admiralty, Sir Robert Harris, Commander-in-Chief on the Cape station, decided to make her sufficiently water-tight to be used as a target, in order to test her vulnerability. Accordingly, she was towed into False Bay and there set adrift. Then the four vessels present, in line ahead, the flag-ship leading, steamed past her, opening fire with their 12 and 3 pounder Q.F. guns. Of the first three shells from the "Doris" two passed through that part from which the boilers and engines had been removed, and would probably have caused an explosion had she been under steam. The third shell damaged the conning-tower. As she was rolling in the trough of the sea the "Tartar" put a shell clean through her bottom, when she almost immediately foundered. Altogether, the boat was only under fire about five minutes, and was in a sinking condition after the first four or five rounds.

A New Gas Check.—The effective power of rifled guns has been greatly increased by a new gas check, the invention of Lieutenant Dawson, R.N., and Mr. Vickers, jun., of the firm of Vickers, Sons, and Maxim. The erosion of the lining or rifling of heavy guns, caused by the sudden escape of high-temperature gas at the moment of explosion of the cartridge, has been a matter of serious inconvenience, as it has hitherto been impossible to altogether prevent the escape of this gas. The new invention is similar to the "cup leather" used in hydraulic engineering work, which, as a perfect gas check, will effectually prevent erosion as well as what is technically called "over-ramming." The "cup-leather" is made of asbestos, covered with copper, and is fixed to the base of the shell by a copper band. At the moment of explosion the flange in the asbestos belt is forced tightly against the rifling of the gun, and is pressed against the shell as it progresses down the narrowing muzzle. The result is that the initial pressure of the explosion is fully maintained; the muzzle velocity is correspondingly increased, and the penetrating power of the gun kept up to its highest standard. At the experiments of the patent with 6-inch guns, the muzzle velocity was found to have increased from about 2,700 to 3,500 feet per second.

Launches.—The new first-class battle-ship "Irresistible," of which the first keel-plate was laid as recently as April 11th last, was launched at Chatham, on the 15th ult., by the Princess Christian. The new vessel is of the "Formidable" class, and of the following dimensions:—Length between perpendiculars, 400 feet; extreme beam, 75 feet; draught—26 feet 3 inches forward, 27 feet 3 inches aft. Her displacement is 15,000 tons, and the weight of the hull when launched was 5,000 tons. Her inverted vertical triple-expansion engines, made by Messrs. Maudslay, Sons, and Field, will have an I.H.P. of 15,000, while her boilers will be of the "Belleville" type. Her speed will be 18 knots and her coal stowage 2,040

tons. The armament of the "Irresistible" will consist of four 12-inch breech-loading wire guns, twelve 6-inch Q.F. guns, sixteen 12-pounder Q.F. guns weighing 12 cwt. each, two 12-pounder Q.F. guns weighing 8 cwt. each for boat use, six 3-pounder Q.F. guns, and eight ·45-inch Maxims. Four submerged torpedo-tubes, and fourteen 18-inch and five 14-inch torpedoes complete her powers of offence. The following is the thickness of the armour plating in various parts:—For 216 feet of the sides, 9 inches; on bulkheads, 12 inches, 10 inches, and 9 inches; on barbettes, 12 inches, with 10-inch hoods; on casemates, 6 inches; on fore conning-tower, 14 inches, with 8-inch communication-tubes; on after conning-tower, 3 inches, with 3-inch communication-tubes; on the twelve gun-shields, 6 inches; on the roof and floor of the casemates, 3 inches of Harveyized nickel steel; and as protective plating on bows, 2 inches. The following are the particulars of the protective deck plating:—Middle deck between armour bulkheads, two thicknesses of 1 inch, with an extra thickness of 1 inch on the slopes over the machinery spaces; lower deck before forward armour bulkhead, two thicknesses of 1 inch; lower deck abaft after armour bulkhead, two thicknesses of 1 inch and ½ inch respectively; main deck between armour bulkheads, two thicknesses of ½ inch. The ship will have two steel masts, each fitted with a military or fighting top. The boats include four steamboats, two 56 feet in length and two 40 feet in length, and 14 sailing and pulling boats, ranging from a 42-foot sailing-launch to a small dinghy. The two larger boats are capable of steaming about 13·5 knots, and are fitted with torpedo-dropping apparatus. They will also act as scouts whilst the parent-ship is in harbour. Three independent sets of dynamos and engines are required to light the ship, work the electric motor fans and the search-lights. Every compartment except the double bottom, etc., will be efficiently lighted by incandescent lamps. Further details of her sister-ship the "Formidable," with a plan showing disposition of the armour, were given in the Naval Notes of last month's JOURNAL.

The new sloops "Condor" and "Rosario," which were commenced on January 1st, 1898, were floated out at Sheerness dockyard on the 15th ult. They are sister-sloops, built from the designs of Sir W. H. White, K.C.B., director of naval construction, and their principal dimensions are:—Length, 180 feet; beam, 32 feet 10½ inches; draught of water—10 feet forward, 13 feet aft; displacement at load draught, 980 tons. They differ but slightly from the "Alert" and "Torch," which were built in the same dock. Their beam is increased by 4½ inches, this alteration being made in consequence of the decision to fit them with water-tube boilers. Their displacement is thereby increased by 20 tons. Their steel plating is ¼ inch thick, and is sheathed with wood 4 inches thick to a height of 2 feet above the load draught. The copper sheathing extends to 1 foot above the load-line. The holds of the ships are minutely divided into water-tight compartments, while above the boiler and engine rooms runs a steel water-tight deck, which forms a division between the upper and lower coal bunkers. When completed the sloops will carry square yards on the fore and main masts, and will present a very graceful appearance. Their armament will consist of six 4-inch Q.F. guns, together with an auxiliary armament of four 3-pounder Hotchkiss Q.F. guns, and two Maxim machine guns.

The machinery of the "Condor" is being made by the Thames Shipbuilding Company, Blackwall. Her engines are to be of the triple-expansion type, capable of indicating 1,400 H.P. with the forced draught, giving her a speed of 13·25 knots per hour, and 1,100-H.P. with the natural draught, giving her a speed of 12·6 knots per hour. The engines of the "Rosario" are in course of construction at Keyham, and are to be of the same type as the "Condor's." Both will be fitted with water-tube boilers. The stem and rudder-posts of the sloops

are castings, composed of phosphor bronze, and were manufactured in the foundry at Sheerness yard.—*Times* and *Naval and Military Record.*

Naval Expenditure and Mercantile Marine.—The following Return, showing Aggregate Naval Expenditure on Seagoing Force; Aggregate Revenue; Aggregate Tonnage of Mercantile Marine; Annual Clearances of Shipping in the Foreign Trade; Annual Clearances of Shipping in the Coasting Trade; Annual Value of Imports by Sea, including Bullion and Specie and Transhipment Trade; and Annual Value of Exports by Sea, including Bullion and Specie and Transhipment Trade, of various Countries, including British Self-governing Colonies, for the year 1897, has been issued as a Parliamentary Paper. Where it has not been possible to give the particulars for 1897, the figures for the latest year available have been shown:—

Countries.	Aggregate Naval Expenditure on Seagoing Force.	Aggregate Revenue.	Aggregate Tonnage of Mercantile Marine.	Annual Clearances of Shipping in the Foreign Trade.	Annual Clearances of Shipping in the Coasting Trade.	Annual Value of Imports by Sea, including Bullion and Specie and Transhipment Trade. ††	Annual Value of Exports by Sea, including Bullion and Specie and Transhipment Trade. ††
BRITISH EMPIRE	£	£	Tons.	Tons.	Tons.	£	£
United Kingdom	23,886,177 (*a) (1896-97)	106,614,000 (Year ended 31st March, 1898)	8,953,171† (1897)	45,275,534 (1897)	49,417,222* (1897)	510,622,000 (*f) (1897)	354,516,000 (*f) (1897)
India	298,229 (*b) (1896-97) (*c)	56,673,948 (*d) (Year ended 31st March, 1897)	49,231 (*e) (1897)	3,814,596 (‖a) (Year ended 31st March, 1897)	12,738,816 (‖a) (Year ended 31st March, 1897)	53,698,916 (Year ended 31st March, 1897)	65,579,875 (Year ended 31st March, 1897)
SELF-GOVERNING COLONIES §—							
Australasian ‡							
New South Wales ...	46,934 (1896-97)	9,287,000 (Year ended 30th June, 1897)	121,595 (1897)	3,412,554 (1897)	No Returns	17,813,058‡‡ (1897)	19,252,453‡‡ (1897)
Victoria ...	61,637 (1896-97)	6,630,217 (Year ended 30th June, 1897)	96,347 (1897)	2,428,182 (1897)	707,067 (1897)	14,249,623§§ (1897)	16,031,262§§ (1897)
South Australia (except Northern Territory)	16,780 (1896-97)	2,611,434 (1897)	51,580 (1896)	1,785,673 (1897)	No Returns	4,970,996 (1897)	6,104,453 (1897)
Northern Territory		71,242 (Year ended 30th June, 1897)	184 (1897)	93,738 (1897)	No Returns	150,701 (1897)	142,335 (1897)
Western Australia ...	3,010 (1896-97)	2,843,775 (1897)	9,710 (1897)	1,181,072 (1897)	No Returns	6,331,266 (1897)	3,940,098 (1897)
Tasmania ...	4,781 (1896-97)	845,020 (1897)	14,376 (1897)	441,538 (1896)	No Returns	1,367,608 (1897)	1,744,461 (1897)
New Zealand ...	20,772 (1896-97)	4,815,809 (Year ended 31st March, 1897)	87,837 (1897)	675,333 (1897)	5,446,149 (1897)	8,055,223 (1897)	10,016,993 (1897)
Queensland ...	21,542 (1896-97)	3,613,150 (Year ended 30th June, 1897)	22,758 (1897)	559,290 (1897)	3,583,524** (1897)	5,230,094 (1897)	7,896,470 (1897)
African—							
Natal	—	2,213,074 (Year ended 30th June, 1897)	3,654 (1897)	1,248,073 (1897)	No Returns	6,001,969‖‖ (1897)	1,579,538*** (1897)
Cape of Good Hope	—	7,257,700 (Year ended 30th June, 1897)	1,929 (1897)	2,709,795 (1897)	3,723,409 (1897)	17,997,789¶¶ (1897)	21,660,210*** (1897)
American—							
Dominion of Canada ...	—	7,773,242 (Year ended 30th June, 1897)	708,154‖ (1897)	5,919,547¶ (Year ended 30 June, 1897)	12,828,243¶ (Year ended 30 June, 1897)	22,868,634††† (Year ended 30 June, 1897)	28,345,942‡‡‡ (Year ended 30th June, 1897)
Newfoundland	—	330,984 (Year ended 30th June, 1897)	106,118 (1897)	388,079 (Year ended 30 June, 1896)	No Returns	1,220,206 (Year ended 30 June, 1897)	1,012,148 (Year ended 30th June, 1897)

REMARKS.

* Exclusive of the tonnage of vessels that cleared in ballast from London.

(*a) Of this total £23,190,957 was ordinary expenditure, and £695,220 was expenditure under the Naval Works Act, 1896 (outside Navy Votes).

(*b) Expenditure in India converted into sterling at the official rate for the year of 1s. 1½d. the rupee.

(*c) Includes a contribution of £97,443 for Her Majesty's ships in Indian waters, and £59,600 for Her Majesty's ships and vessels for the Naval Defence of India. The balance represents expenditure on the Royal Indian Marine. The annual contribution in respect of Her Majesty's ships in Indian waters is £100,000.

(*d) Converted at the rate of 1s. 2·45d. to the rupee, the mean rate for the year.

(*e) In addition to the vessels registered under the Imperial Act of 1894, India owns some vessels of small tonnage registered under the Indian Act X. of 1841; these are not included in the table.

(*f) Including transhipments, valued at £10,752,000.

† Including the Isle of Man and Channel Islands.

‡ Includes contribution towards the maintenance of Her Majesty's vessels for protection of floating trade in Australasian waters, as follows, for 1896-7:—

New South Wales	£37,989	New Zealand	£20,772
Victoria	34,132	Queensland	13,691
South Australia	10,625		
Western Australia	3,010	Total ...	£125,000
Tasmania	4,781		

The annual contribution is £126,000, payable in advance. It was apportioned amongst the various Colonies on a population basis for the year commencing 1st April, 1897, as follows:—

New South Wales	£37,820	New Zealand	£20,814
Victoria	34,243	Queensland	13,762
South Australia	10,499		
Western Australia	4,021	Total ...	£126,000
Tasmania	4,841		

§ As regards the revenues of these Colonies, it should be observed that they are exclusive of loans raised.

‖ Including vessels registered under the 41 c. of the Consolidated Statutes of Canada for Inland Navigation only.

(‖a) Including native craft.

¶ Exclusive of the tonnage of vessels (6,646,108 tons) trading on the rivers and lakes between Canada and the United States.

** Inclusive of the tonnage of vessels (2,749,512 tons) engaged in coasting voyages terminating beyond the Colony.

†† As a rule there are no separate returns of the transhipment trade in the British Colonies, but, wherever possible, the value of such trade has been included in the figures given.

‡‡ Exclusive of transhipments, the value of which is not known.

§§ Including transhipments, valued at £990,357. The returns of transhipment are incomplete.

‖‖ Including the value of goods imported in transit for the interior.

¶¶ Including the value of goods entered for removal to places outside the Customs Union.

*** Including the value of gold, the produce of South African States, brought into the Colony, overland, and exported by sea.

††† Total imports for home consumption. Imports by sea are not separately shown in the Canadian returns.

‡‡‡ Total exports. Exports by sea are not separately shown in the Canadian returns.

NOTE.—The above particulars, with the exception of those for naval expenditure, which have been furnished by the Admiralty, have been extracted either from Board of Trade returns or from the official returns of the various Colonies.

NAVAL NOTES.

Countries.	Aggregate Naval Expenditure on Seagoing Force.	Aggregate Revenue.	Aggregate Tonnage of Mercantile Marine.	Annual Clearances of Shipping in the Foreign Trade.	Annual Clearances of Shipping in the Coasting Trade.	Annual Value of Imports by Sea, including Bullion and Specie and Transhipment Trade.	Annual Value of Exports by Sea, including Bullion and Specie and Transhipment Trade.
	£	£	Tons.	Tons.	Tons.	£	£
France	10,620,539 (1897)	138,375,000 (a) (1897)	920,871 (1897)	15,898,365 (1897)	7,055,886 (1896)	147,908,000 (d) (1897)	130,796,000 (d) (1897)
Russian Empire	5,990,217 (1897)	141,397,000 (a) (1897)	577,207 (1896)	9,068,695 (c I) (1897)	14,082,081 (c II) (1896)	29,082,000 (d)(t)(x) (1896)	43,791,000 (d)(t)(x) (1896)
Germany ...	5,806,577 (1897)	64,773,000 (a) (1897-98)	1,487,577 (1896)	11,943,309 (1896)	3,469,352 (1896)	249,575,000 (b)(d) (1897)	197,785,000 (b)(d) (1897)
Italy	3,973,452 (1896-97)	70,917,000 (1897)	786,644 (1897)	8,614,283 (1896)	18,063,669 (c III) (1896)	33,969,000 (c) (1897)	25,403,000 (c) (1897)
Spain	937,336 (1896-97)	30,951,000 (a)(v) (1896-97)	756,305 (1896)	13,866,780 (1896)	11,143,245 (1896)	29,986,000 (1896)	36,114,000 (1896)
Austria-Hung'y	1,165,105 (1897)	Austria. 57,901,000 (a) (1897) Hungary. 46,414,000 (1897)	Austria. 155,130 (1896) Hungary. 62,372 (1897)	11,336,990 (e) (1896)	See note (e)	12,519,000 (t) (1897)	8,238,000 (t) (1897)
Netherlands ...	1,298,608 (1897)	10,174,000 (a) (1897)	296,081 (1897)	8,384,189 (1897)	—	Tons. 9,701,000 (s) (1896)	Tons. 2,037,000 (s) (1896)
Portugal ...	641,959 (1896-97)	11,182,000 (a) Year ended (30th June, 1897)	—	7,271,991 (1896)	1,263,282 (p) (1896)	£ 11,392,000 (b)(d)(f) (1897)	£ 8,443,000 (b)(d)(f) (1897)
United States (year ended 30th June) ...	6,625,545 (1898)	89,664,000 (a I) (1897)	805,584 (g) (1897)	19,878,405 (h) (1897)	—	151,858,000 (d) (1897)	205,398,000 (d) (1897)
China	Cannot be given.	—	58,154 (k) (1896)	4,800,455 (1897)	12,116,276 (l) (1897)	31,614,000 (d) (1897)	25,756,000 (d)(m) (1897)
Japan	8,667,464 (1897)	16,647,000 (a) (a II) (1896-97)	253,326 (n) (1896)	3,092,431 (1896)	—	18,598,000 (d) (1896)	12,766,000 (d) (1896)
Chile	889,334 (1897)	6,184,000 (w) (1896)	80,275 (1896)	2,943,514 (1897)	7,468,990 (1897)	13,646,000 (b)(t) (1897)	13,490,000 (b)(t) (1897)
Brazil	1,184,988 (1896)	11,310,000 (a) (v I) (1897)	—	—	—	—	—
Argentine Republic ...	822,435 (y) (1896)	8,414,000 (1896)	86,090 (1893)	8,093,386 (1896)	—	22,411,000 (c)(r)(t) (1896)	22,873,000 (c)(r)(t) (1896)

REMARKS.

NOTE.—The actual naval expenditure for any year is seldom known—never immediately—the figures given, therefore, are the sums voted. With regard to the revenue of foreign countries, in converting the foreign currencies into £'s sterling the par value of the foreign money has been taken, except in the case of Japan [see (a II)], Chile [see (w)], Brazil [see (v I)], and Argentine Republic [see (w)].

The particulars given for the imports and exports of foreign countries by sea are usually exclusive of transhipment trade.

(a) Budget Estimates.

(aI) Exclusive of receipts from loans and Treasury notes.

(aII) Calculated on the value of the yen in 1896. Includes the Chinese indemnity and sums received from special reserve fund.

(b) Total trade. Imports and exports by sea are not separately distinguished in the respective trade volumes.

(c) Including silver bullion only.

(cI) The figures refer to Russia in Europe, including the Caucasian ports of the Black Sea.

(cII) The figures refer to the coasting trade of the White, Baltic, and Black Seas, and the Sea of Azoff.

(cIII) "Navigazione di Cabotaggio e di Scalo."

(d) Excluding bullion and specie.

(e) Including coasting trade, exclusive of Hungary.

(f) These figures are provisional only, and subject to rectification.

(g) Registered for over-sea (*i.e.*, foreign) trade only.

(h) Exclusive of the tonnage of vessels (3,830,790 tons) engaged in the Lake trade between the United States and Canada.

(k) Vessels of foreign (*i.e.*, non-Chinese) type only, belonging to Chinese owners and sailing under the Chinese flag.

(l) Coasting trade between the treaty ports of China.

(m) Including tea carried overland from Tien-tsin to Russia, *viâ* Kiakhta.

(n) Registered vessels only. The tonnage of Japanese vessels is that of vessels of foreign type, excluding junks.

(p) Portuguese vessels only.

(r) By sea and river.

(s) Metric tons of 2,204 lbs. The particulars as to value of trade by sea are not available from the Dutch trade volumes.

(t) Special trade, *i.e.*, imports for home consumption or exports of domestic produce and manufacture, as the case may be.

(v) From the "Almanach de Gotha" for 1897.

(v I) From the "Almanach de Gotha" for 1898, the milreis having been taken as equivalent to 8d.

(w) From the "Almanach de Gotha" for 1898, the figures being 81,328,638 pesos (at 1s. 6¼d.).

(x) Trade by European frontier and with Finland.

(y) Estimated.

NOTE.—The above particulars, with the exception of those for naval expenditure, which have been furnished by the Admiralty, have been extracted from the official returns of the various countries mentioned, except in the case of Spain, Chile, and Brazil—see notes (v), (v I), and (w).

[It may be convenient to state here that previous returns of a similar nature have been printed in the *Times* of September 7th, 1894; January 20th, 1896; and November 22nd, 1897.]

FRANCE.—The following are the principal promotions and appointments which have been made:—Capitaine de Vaisseau—C. A. St. Paul de Sinçay to "Bouvines." Capitaines de Frégate—J. A. Mallet to Capitaine de Vaisseau; J. S. Lephay to "Rance"; L. J. Divet to "Manche"; J. A. Daniel to "Aube."—*Le Journal Officiel de la République Française.*

In consequence of the delay in getting ready the "D'Entrecasteaux," Rear-Admiral Courrejolles and staff will proceed to his command by mail steamer leaving Marseilles on 1st January, and on arrival in China will temporarily hoist his flag in the armoured cruiser "Vauban." The cruisers "Bugeaud" and "Faucon," the former bearing the flag of Vice-Admiral Pottier, returned to Toulon from Crete on 29th December, and are to be placed in the 2nd Category of the Reserve; the "Condor" remains at Crete to represent the French flag. On account of his services during the Cretan difficulty Vice-Admiral Pottier, who hoisted his flag in May, 1896, had his term of appointment extended by the Government, but he will now haul down his flag early in January.

The new commerce-destroyer "Guichen" has arrived at Toulon from Saint-Nazaire, where she has been built, to carry out her trials and complete for sea. The official forced-draught trial will last three hours; 24,000-I.H.P. is to be developed, with a consumption of coal not exceeding 150 kilogrammes per square metre of grate surface, and the speed is to be 23 knots. Should the speed fall below 21 knots the ship can be refused by the Government, or should the coal-expenditure exceed 155 kilogrammes per square metre of grate surface. The natural-draught trial is to last 24 hours, with 26 out of her 36 furnaces alight; the engines to develop 14,500-I.H.P., with a coal consumption not exceeding 850 grammes per H.P. per hour, with a premium or fine of 200 francs per gramme of coal, according as the consumption falls below or exceeds the limit laid down. There will also be coal-consumption trials at 19,000-I.H.P. and at 8,500-I.H.P.

Steam Trials.—The new second-class cruiser "Protet" has carried out a successful full-power trial at Rochefort. Her 24 hours' trial gave the following results:—I.H.P., 6,500; expenditure of coal per H.P. per hour, 770 grammes (1·7

lbs.). In the official consumption trials the expenditure of coal per H.P. per hour was 610 to 753 grammes, the estimated expenditure having been 750 to 800 grammes (1·65 to 1·76 lbs.). At the full-power trial 9,300-H.P. was obtained, the contract having been for 9,000-H.P., the speed being slightly over 20 knots, with a coal consumption of 610 grammes per H.P. per hour. Her boilers are of the Belleville type.

The new torpedo-destroyer "Dunois" completed her 24 hours' trial on 24th December off Cherbourg with satisfactory results, as follows:—I.H.P. 2,776; speed, 18·1 knots; consumption, 696 grammes (1·53 lbs.) per H.P. per hour.

The new first-class cruiser "D'Entrecasteaux," which was to have commissioned at Toulon early in December as flag-ship on the China station, has not yet done so, her trials having been unsatisfactory, the stipulated H.P. not having been obtained. Before paying the penalty fine the contractors have asked for another series of trials, which has been allowed.

The torpedo-aviso "Fleurus," which was launched as long ago as 1893 and whose machinery and boilers have, ever since her first trial five years ago, given trouble, recommenced her trials at Cherbourg on 23rd December. The alterations made in the ventilation of the stokehold have apparently been satisfactory, as she developed easily 3,800-I.H.P. at an expenditure of 160 kilogrammes of coal per square metre (33 lbs. per square foot) of grate surface per hour, the speed obtained being 17·6 knots. She is after five years' patching at last to be commissioned, and will relieve a sister-ship, the "Épervier," in the Squadron of the North.

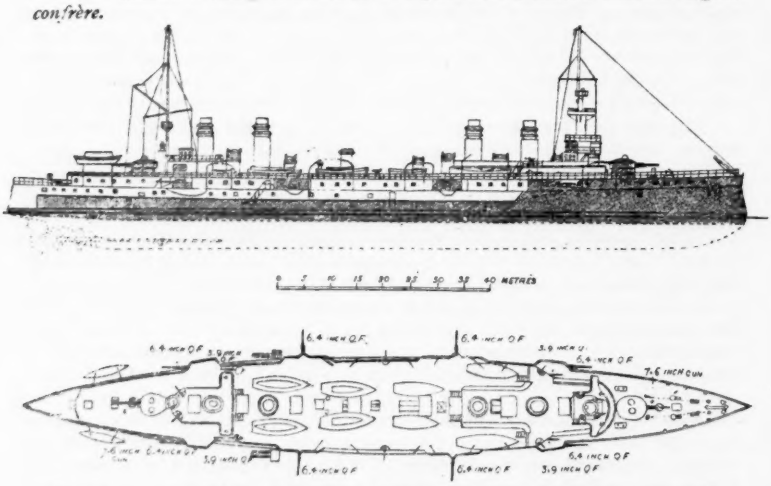
The submarine torpedo-boat "Gustave Zédé" has now been passed into the Service. The following is an account of her last performance. She proceeded from Toulon to the roadstead of Hyères, steaming above water, and notwithstanding the mistral blowing proved herself an excellent sea boat. At Hyères she made two attacks on the battle-ship "Magenta," and on each occasion the torpedo, fitted with a collapsible head, was found to have struck the ship. The target presented by the "Zédé" when at the surface is extremely small, and it is considered that the chances of hitting the boat with Q.F. guns are almost nil. At about 2 kilometres from the enemy the boat is quite invisible; at this distance the bearings are fixed, and the boat then takes a dive for a distance of about a kilometre, it then comes to the surface, corrects its direction, and dives again immediately, and proceeds in this manner till at a suitable distance for discharging a torpedo.

New Station Limits.—From March 1st, 1899, the Naval Division in the Far East will bear the title of "Division Navale de l'Extrême Orient et du Pacifique Occidental," and the station will include the China and Japan Seas, the Philippines and East Indian Islands, and the coasts of Australasia. At the same date the Pacific Division will take the name of "Division Navale du Pacifique Oriental," the station being bounded on the west by the limits of the new Western Pacific station. The Indian Ocean Division station will no longer include the southern coasts of the Sunda Isles nor the west coasts of Australia.

In consequence of these changes the aviso-transport "Eure" will, after March 1st, be transferred from the Pacific to the new China and West Pacific command, under Admiral Courrejolles, and the transport "Aube" at the Society Islands will be attached to the new Eastern Pacific station; she will, however, continue each year, as formerly, to make a voyage in the month of May between Tahiti and New Caledonia.

Proposed Torpedo Committee at Toulon.—The Minister of Marine has asked for a report on a proposal to establish a central experimental torpedo committee at Toulon. The proposed committee is to consist of a capitaine de frégate as president, a lieutenant, a first-class engineer, a captain of artillery, and an assistant naval constructor, and will be under the director of submarine defences, and it is intended that it should replace the present experimental committee on board the "Algesiras" and at the five naval ports.

The Proposed Additions to the Active List.—The proposal of the Minister of Marine to increase the list of officers of the Navy by 1 vice-admiral, 5 capitaines de vaisseau, 25 capitaines de frégate, 75 lieutenants, and 80 engineers, has been approved by the Commission de la Marine of the Chamber, except as regards the vice-admiral, which is not thought necessary, as by the present list when all appointments are filled there will still be 2 vice-admirals for disposal. This increase to the number of officers being contemporaneous with a similar increase in the English Navy has given occasion for a comparison of the prospects of advancement in the two Services, which the *Temps* gives as follows:—*In the English Navy* the percentage of admirals to all junior grades up to and including that of lieutenant is 3·7 per cent., and to the superior grades of captain and commander 13 per cent. The percentage of superior grades (namely, captain and commander) to the lieutenants being 39 per cent. *In the French Navy*, by the new increase, the above proportions are respectively 3·83 per cent., 12·3 per cent., and 44·63 per cent., from which it appears that though the chances of superior officers obtaining flag rank are slightly less favourable in the French than in the English Navy, on the other hand the French naval lieutenant has a better chance of rising to the rank of captain or commander than his English *confrère*.



PROFILE AND DECK PLANS OF NEW FRENCH ARMOURED CRUISERS "DE GUEYDON," "DUPETIT-THOUARS," AND "MONTCALM."

New Armoured Cruisers.—The new first-class armoured cruisers "De Gueydon," "Dupetit-Thouars," and "Montcalm" are to be vessels of the following dimensions:—

Length between perpendiculars	448 feet 6 inches.
Extreme beam	62 ,, 9 ,,
Depth of hold	22 ,, 6 ,,
Mean draught	22 ,, 9 ,,
Displacement	9,500 tons.
Coal stowage	1,025 ,,

As in the "Jeanne d'Arc," the protection consists of a cellular space comprised between the two armoured decks, covered on the outside an armour belt in two streaks; the lower of which, 6 inches in its thickest part at the water-line, but tapering off below and towards the extremities of the ship, extends from 4 feet 9 inches below the water-line to 1 foot above; the upper belt,

3·8 inches thick, extends from the upper edge of the lower belt to the upper armour deck, except forward, where it is carried right up to the forecastle deck, while aft it stops immediately abaft the rudder, the two ends being joined by a transverse armoured bulkhead, which reaches to the double bottom. Two other armoured bulkheads, one before the after turret, the other abaft the foremost one, shut in the central battery on the upper deck. The lower armoured deck, which is nearly on a level with the water-line amidships, is 1·2 inches thick on the central flat part and 2 inches thick on the slopes, which extend to the lower shelf of the armour belt; the upper armoured deck is formed of two ½-inch plates of hardened steel. The cellular cofferdam is similar to that in the "Jeanne d'Arc," and is formed by two longitudinal water-tight bulkheads; the space enclosed between the first of these and the ship's side is divided into numerous compartments filled with cellulose, while the space between the two bulkheads serves as a collector for the water which may come through the armour and cofferdam, numerous water-ways being fitted to conduct this water to the hold. The large space enclosed between the two inner bulkheads is also sub-divided as much as possible, while all the trunks leading through it, funnels, ammunition-tubes, ventilators, etc., are protected by armoured combings and a cofferdam. The superstructures differ a little from those of the "Jeanne d'Arc," the spar-deck being continued almost right aft, while the turret for the after 19-centimetre gun is raised above it instead of being on the upper deck, as in the earlier ship. The bridges also are not so large, there being only a small one between the after funnel and the mizenmast, and a somewhat larger one between the two foremost funnels and the foremast, round which it is carried, on it before the mast being the armoured conning-tower, the chart-house, and look-out places.

The armament of these ships will consist of two 19·4-centimetre (7·6-inch) guns in armoured turrets, one forward and one aft, eight 16·4-centimetre (6·4-inch) Q.F. guns in armoured casemates, four 10-centimetre (3·9-inch) Q.F. guns on the spar-deck, sixteen 3-pounder Q.F. guns distributed in the tops and other parts of the ship, and six 1·5-pounders, with two submerged torpedo-tubes. The eight 16·4-centimetre Q.F. guns are mounted two forward and two aft in the angles of the casemate, with an arc of training which enables them to be fired from right ahead and right astern to the beam respectively, the remaining four being mounted on the broadside. The casemates are protected exteriorly by steel plates extending from the upper to the spar-deck, their internal faces, as well as the roofs and platforms, being also made of hard steel armour; the carriages of the gun are also fitted with steel shields, so that the open part of the gun port is reduced to a minimum. The 10-centimetre Q.F. guns are protected by two shields, one fixed, the other moving with the gun. The ammunition-tubes for the two 19·4-centimetre guns lead straight up into the turrets, those for the smaller guns lead up inside the cofferdam to the casemate. The ships are to be driven by three screws; the engines, each in a separate compartment, develop together 19,600 I.H.P., which is to give under forced draught a speed of 21 knots. The "Montcalm" is to be provided with twenty Norman-Sigaudy water-tube boilers, the "Dupetit Thouars" twenty-eight Belleville, and the "De Gueydon" twenty-five Niclausse. The ships will be lighted and the guns and ammunition hoists worked by electricity, which will be provided by four dynamos. The normal provision of coal is 1,025 tons, which will give a radius of action at 10 knots of 6,500 miles, or of 1,230 miles at full speed. With all reserve places filled with coal, the radius at 10 knots is increased to 10,300 miles and at full speed to 1,920 miles; or they can run, in other words, for 61 hours with their normal coal supply and for 90 hours with the extreme limit of stowage. The *Yacht* complains that in this class of vessel the coal supply and consequent radius of action is too small, and that the guns in the central redoubt are insufficiently protected.—*Le Yacht* and *Le Temps*.

GERMANY.—The following are the principal promotions and appointments which have been made: Rear-Admiral—von Wietersheim to Command of Second

Division of First Squadron; Bendemann to be Chief of the Staff at the Ministry of Marine. Kapitäns zur See—von Wietersheim and Hugo von Schuckmann to Rear-Admirals; von Holtzendorff to be Chief of the Staff of the Baltic Division; Jaeschke to be Governor of Kiau Chau; von Prittwitz und Gaffron to be Superintendent of Danzig Dockyard; Plachte to Command of First Dockyard Division; Graf von Baudissin to "Hohenzollern"; Korvetten-Kapitäns—Goetz, Holzhauer, and Wahrendorff to Kapitäns zur See; Müller to "Deutschland"; Emsmann to "Kormoran"; Pohl to "Ægir"; Walther to "Odin"; Lilie to "Beowulf"; Kalau von Hofe to "Frithjof."—*Marine-Verordnungsblatt.*

New Rank and Additions to the Active List of Officers.—An Imperial Decree of the 23rd November establishes the new rank of fregatten-kapitäns (frigate captains) for korvetten-kapitäns (commanders), who have the rank of lieutenant-colonel, so that the grades of both Army and Navy are now identical.

In consequence of the increase of the fleet, a considerable addition is to be made to the strength of the Executive Officers' List, which up to lately has stood at 760 of all ranks, exclusive of midshipmen and cadets. The list is now to be increased by 340, so that it will stand in the future at 1,100, made up as follows:—1 admiral, 5 vice-admirals, 13 rear-admirals, 60 captains, 131 commanders, 234 captain-lieutenants, 382 lieutenants, and 274 sub-lieutenants. The number of midshipmen and cadets is to be increased from 300 to 450.

Trial Trips.—The new first-class battle-ship "Kaiser Friedrich III." has been making her trial trips successfully. She is the first of the five first-class battleships being constructed under the new programme, and the Constructor's Department has not hesitated to profit by the lessons of the Spanish-American war, wood having been almost entirely dispensed with in her construction, the decks being either covered with cement or the steel left bare, there being no wood at all near any of the guns or where men will be stationed in action. The "Kaiser Friedrich III." has a displacement of 11,130 tons, is 377 feet 4 inches long, with a beam 67 feet and a mean draught of 25 feet 8 inches. Protection is afforded by an all-round water-line belt of hardened steel 11·8 inches thick, tapering away at the bow and stern, and a 3-inch armoured deck. She carries four 9·2-inch guns of the newest pattern mounted in two Harveyized steel turrets, one fore and one aft, protected by 9·8-inch armour in front, tapering to 6 inches. Her secondary armament is a powerful one, as she carries eighteen 5·9-inch, twelve 3·3-inch, twelve 1·4-inch, all Q.F. guns, and twelve 3-inch machine guns. The 5·9-inch guns are protected either by turrets or casemates of 6-inch steel. The "Kaiser Friedrich III.," like all the larger modern German war-ships, has three screws, driven by three separate sets of engines, each in a water-tight compartment, built at the Government establishment at Wilhelmshaven. Steam is generated in twelve boilers, whereof eight are cylindrical and four of the water-tube variety, in six compartments. At her forced-draught trial the engines developed 13,500-I.H.P., or 500-H.P. over the contract, making 115 revolutions, and giving a speed of 18 knots, although there was a heavy sea running at the time.

The battle-ship "Baiern" lately made a six hours' forced-draught trial, when she made an average of 15·5 knots, the engines developing 6,386-I.H.P. With her old engines and boilers the speed of the ship was only 12 knots. As is being done in all new ships, so in the "Baiern" and her sister-ship the "Sachsen," at present under repair, all woodwork, as far as possible, has been done away with; in particular the wood planking of the decks has been removed, the iron being covered with a new kind of cement called Xylolith or Torgament.

The new second-class cruiser "Freya" has had a satisfactory full-speed trial; the engines developed 10,500-I.H.P., 800-H.P. in excess of the contract, and the mean speed was 20 knots. The ship is fitted with Niclausse water-tube boilers.

The new torpedo-division-boat D 10, which has been built by Messrs. Thornycroft for the Admiralty, has made a satisfactory trial, the mean speed being 28·5

knots, being a knot in excess of the contract. Her delivery has been delayed, owing to the engineering strike, for nearly 12 months. She was ordered from England in order to decide whether the English builders could really obtain in their destroyers a greater speed than the German firms like Schichau of Elbing have yet succeeded in doing.

During last year's Naval Manœuvres, the opportunity was taken of testing the new Schichau torpedo-boats Nos. 82, 83, 84, 85, 86, and 87, with Nos. 81 and 89 built by the Germania Yard. These new boats have all been supplied with Thornycroft water-tube boilers, in place of the Schichau locomotive boiler, which has been used in all former boats. The dimensions of the boats are as follows:—Length, 145 feet 3 inches; beam, 16 feet 4 inches; with a displacement of 155 tons. There is one submerged bow tube and two above water on the broadside, and they carry in addition one 5-centimetre (1·9 inch) Q.F. gun and a machine gun. The engines develop 1,800-I.H.P., have a coal supply of 30 tons, and a speed of 25 knots. Although these new boats are the fastest in the German Navy, yet it is doubtful if their sea-going qualities are as good as the older ones; one, No. 85, having gone down in a gale off Fehmarn Island on 31st August.

Launch.—The first-class gun-boat "Jaguar" was launched at Danzig on the 19th November. Her dimensions are as follows:—Length, 201 feet 6 inches; beam, 29 feet 6 inches; with a displacement of 895 tons on a mean draught of 9 feet 9 inches. She is composite built and will be wood-sheathed, and being intended for tropical service her poop, forecastle, and upper deck will be wood-planked, the steel of the lower deck being covered with linoleum. She will be twin-screwed, and the engines are to develop 1,300-I.H.P., giving a speed of 13 knots. She will have three masts with a fore and aft rig.

New Ships.—The new small cruiser "A" is to be built at the Krupp-Germania Yard at Kiel. Her sister-ship "B" is to be built at the Weser Yard at Bremen. These ships, with a third sister, the "Gazelle," form a class of themselves, as they are much superior to the earlier fourth-class cruisers, being larger, heavier armed, and having an armoured deck. Their dimensions are as follows:—Length, 328 feet; beam, 38 feet 7 inches; with a draught of 15 feet 9 inches on a displacement of 2,808 tons. The engines are to develop 6,000-I.H.P., to give a speed of 19·5 knots. The armament will consist of ten 4·1-inch Q.F. guns, fourteen 1·4-inch Q.F. guns, four machine guns, and two torpedo-tubes. The ships are to be completed in two years and a half, and will each cost 3,350,000 marks, being at the rate of 1,193 marks for each ton of displacement.

The other ships under construction at present are:—Battle-ships "A" and "B," building by Blohm and Voss, Hamburg, and at the Schichau Yard, Elbing, respectively, to be completed in four years, at a cost for each ship of 14,250,000 marks; the first-class armoured cruiser "A," building at the Imperial Dockyard, Kiel, to be completed in three years, at a cost of 11,600,000 marks; the two first-class gun-boats Ersatz "Wolf" and Ersatz "Habicht," building at the Imperial Dockyard, Danzig, to be completed in two years, at a cost of 1,250,000 marks each; finally, eight torpedo-boats, building by the Schichau firm at Elbing, to be completed in two years at a cost of 3,184,000 marks.

Distribution of the Fleet on the 1st inst.:—

Kiel and Wilhelmshaven.—First Squadron under command of Vice-Admiral Thomsen, with Rear-Admiral von Wietersheim as second-in-command.

First Division:—

First-class battle-ships—"Kurfürst Friedrich Wilhelm" (*Flag Ship of Commander-in-Chief*), "Brandenburg," "Weissenburg," "Wörth."

Despatch-vessel—"Hela."

Second Division:—

Third-class battle-ships—"Baden" (*Flag Ship of Rear-Admiral*), "Baiern," "Oldenburg."

Despatch-vessel - "Greif."

At Kiel, as Depôt-ships of Baltic Reserve Division :—
Fourth-class battle-ships—"Ægir," "Odin."
Torpedo-school-ship—"Blücher."
Torpedo experimental-ship—"Friedrich Karl."

At Wilhelmshaven, as Depôt-ships of North Sea Reserve Division :—
Fourth-class battle-ships—"Frithjof," "Beowulf."
Gunnery-school-ships—"Mars," "Carola," "Hay."

At Danzig, as Depôt-ship of Reserve Division :—
Armoured gun-boat—"Skorpion."

On China Station.—
Cruising Squadron, under command of Vice-Admiral von Diederichs, with Rear-Admiral H.R.H. Prince Henry of Prussia as second-in-command.

First Division :—
First-class armoured cruiser—"Kaiser" (*Flag Ship of Commander-in-Chief*).
Second-class cruisers—"Irene," "Prinzess Wilhelm."
Third-class cruiser—"Arcona."

Second Division :—
First-class armoured cruiser—"Deutschland" (*Flag Ship of Rear-Admiral*).
Second-class cruiser—"Kaiserin Augusta."
Third-class cruiser—"Gefion."

On East Asian Station :—
Fourth-class cruiser—"Cormoran."

On Australian Station :—
Fourth-class cruisers—"Falke," "Bussard."
Surveying-vessel—"Möwe."

East Coast of America :—
Fourth-class cruiser—"Geier."
Training-frigates for winter cruise—"Moltke," "Sophie," "Nixe."

East Coast of Africa :—
Fourth-class cruisers—"Schwalbe," "Condor."

West Coast of Africa :—
First-class gun-boats—"Wolf," "Habicht."
Training-frigates for winter cruise—"Stosch," "Charlotte."

Mediterranean :—
Second-class cruiser—"Hertha," to proceed later to East Coast of America.
Despatch-vessel—"Loreley."

RUSSIA.—*Stations of Fleet.*—According to the latest returns, the following is the present distribution of the Russian fleet in foreign waters :—At Port Arthur the first-class battle-ship "Navarin," the first-class armoured cruisers "Dmitri Donskoi" and "Vladimir Monomach" (*Flag Ship of Rear-Admiral Dubasoff*), the armoured gun-boat "Gremiastchi," and the torpedo-cruiser "Vzadnik." At Nagasaki, the second-class cruiser "Kreiser" and the armoured gun-boat "Otvajni." At Ta-lien-wan the second-class cruiser "Admiral Korniloff," at Chemulpho the gun-boat "Sivoutch," and at Nagasaki the gun-boat "Bobr." At Vladivostok were the second-class battle-ship "Sissoi Veliki," the first-class armoured cruisers "Rossia," "Rurik," and "Pamiat Azova," and the gun-boats "Mandjour" and "Koriets." In the Mediterranean at Suda, Retimo, Canea, and in the Piræus were the second-class battle-ship "Emperor Alexander II." (*Flag Ship of Rear-Admiral Skridloff*), the first-class armoured cruiser "Hertzog Edinburgski," the armoured gun-boat "Groziastchi," the first-class gun-boat "Donetz," the torpedo-cruiser "Posadnik," and torpedo-boats Nos. 119 and 120. The Imperial yacht "Standart" is in the Black Sea and was at Yalta.

In consequence of the large number of new ships building for the Russian Navy, it has been found necessary to train an additional 4,000 men of the engine-room ratings. As the training classes for mechanics and stokers are already full, it has been decided to provide room for the additional men by sending those now under training to vessels of the Russian Volunteer Fleet for practical instruction.

Two new torpedo-boat destroyers, the "Yastreb" and "Nyrok," have been launched from the Ijora Yard. At the same yard the new torpedo-boats of the "Sokol" type, Nos. 129 and 130, have been commissioned for trials; 20 others of the same class have been ordered, as well as 20 destroyers of a new type; the work on all of them is to be hurried forward.

The completion of the works at the new Alexander III. harbour at Libau have made such good progress, that the cruisers of the Baltic fleet and the new battle-ships on trial are to take up their quarters there for the winter.

It is reported that the Government has decided for the present to build no more battle-ships in the Black Sea dockyards until the question of the right of passage of Russian war-ships through the Dardanelles has been satisfactorily settled, it being considered that the number of ships in the Black Sea is, under existing circumstances, quite sufficient for all purposes; this determination will allow of all the efforts for creating a powerful fleet being concentrated on the Baltic dockyards.

Some successful experiments have been carried out at St. Petersburg with "Mais-Mark" cellulose. A 6-inch projectile was fired through a cofferdam filled with this substance; after four hours' exposure to water only a quite inappreciable leakage had occurred.—*Kronstädtski Viéstnik.*

Some details were given recently by Commander A. A. Kononoff in a lecture to the Kronstadt section of the Imperial Russian Engineering Society on the operations undertaken by the Swedish Neptune Salvage Company for the raising of the Russian battle-ship "Gangut," lost on 24th June, 1897, near Viborg. A report of the lecture appears in the *Kronstädtski Viéstnik.* It is proposed to raise the ship by pumping air into her, but so far the only work accomplished has been the righting of the vessel. The weather during the summer was very unfavourable, and, moreover, delay was caused by the preparations not being advanced. These preparations were, however, completed by 1st June, when the process of righting the battle-ship began. For this purpose a steamer, the "Hypatia," of 3,200 tons displacement and loaded with 2,400 tons of stone ballast, was sunk 970 feet from the battle-ship and parallel with it. A pontoon was placed between the steamer and the battle-ship at a distance of 720 feet from the former, and eleven steel hawsers, capable of withstanding a strain of 350 tons each, were attached from this to the steamer and the battle-ship. A second pontoon was attached above the battle-ship by six hawsers. The two pontoons had each a lifting capacity of 1,500 tons. On 13th July the ship was righted to within 37°. The further righting of the vessel was effected by undermining the bottom by ejecting compressed air, and by this means the righting of the vessel continued at the rate of 2¼° a week. By the time work ceased for the year the ship had been brought to within 30°. It was not expected that the vessel would be completely righted. In conclusion, the lecturer paid a tribute to the skill of the officials of the Swedish Neptune Company.—*Times.*

American-built War-Ships for the Russian Navy.—Fifteen years ago, when the United States undertook the task of creating a new Navy, it found itself equipped with but few of the tools and less of the experience necessary for the costly and intricate art of war-ship construction. It was entering on a race in which its competitors had a start of nearly a quarter of a century. Few indeed, at the date of its birth, would have ventured to assert that within a decade and a half it would stand fourth among the great Navies of the world,

surpassing the fleets of Germany, Italy, and Spain in size, and equalling that of Great Britain in efficiency.

Next to the test of actual war, no stronger indorsement of the excellence of a nation's war-ships can be desired than the fact that its shipbuilding yards are patronised by foreign Governments, especially if the orders include the highest type of ships in the shape of first-class cruisers and battle-ships. It is well understood that the task of building a modern battle-ship involves a vast and costly plant, and the exercise of such a high order of technical skill, that it can only be accomplished by a comparatively few shipbuilding yards whose plant and working staff are of the most elaborate and perfect description.

The first foreign orders for war-ships of the modern type were those given by the Japanese Government to the Union Iron Works, San Francisco, and the Cramps' Shipbuilding Company, Philadelphia, for two high-speed cruisers. These vessels, which were described in an illustrated article in the *Scientific American* for July 3rd, 1897, have been built and tried, both of them with highly satisfactory results. Following closely upon the successful trial of these ships has come an order to the Cramps' Yard for the construction of two first-class ships—a battle-ship and a cruiser—for the Russian Government. By the courtesy of the contractors we are enabled to give the following details of their construction and equipment.

The 12,700-ton Battle-Ship.

Taking the battle-ship first, as being the more important, we find that she will be an exceedingly handsome vessel, with all the characteristic points of the most modern type. Half battle-ship, half cruiser, it is difficult to say whether she truly belongs to the one class or the other. She has the size, armour, and armament of the battle-ship, with the speed, coal capacity, and wide radius of action of a cruiser. Her principal dimensions are as follows:—

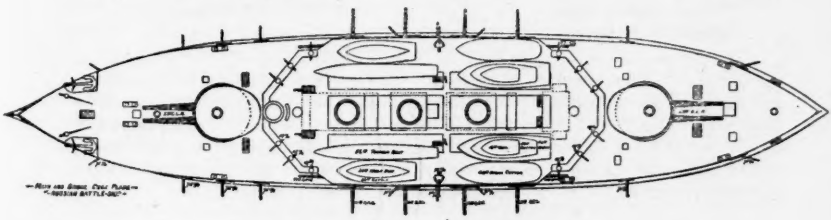
Length between perpendiculars	376 feet.
Beam	72 feet 2½ inches.
Displacement, approximate...	12,700 tons.
Draught, not to exceed	26 feet.
Speed at full displacement for 12 hours	18 knots.

The Russians, like the French, have hitherto rather favoured a continuous belt of side armour at the water-line; but in the new vessel they are adopting the partial belt which characterises the British ships and our own. The belt will extend for two-thirds of the vessel's length, and will be 9 inches in thickness up to the level of the protective deck. Associated with this will be a protective deck 2 inches thick on the flat and 4 inches on the slopes. These slopes will start at the level at the top of the 9-inch belt and descend to a junction with the bottom of belt below the water-line. The space between slope and belt will be occupied by the coal bunkers, so that to reach the engine or boiler rooms a projectile would have to penetrate 9 inches of Krupp steel, from 6 to 10 feet of coal, and 4 inches of sloping Krupp armour. The coal would equal in resistance about 3 inches of steel and the 4-inch slope would equal 6 inches of vertical steel, thus giving a total resistance equal to a single vertical belt of 18 inches of steel, which is the thickness carried by our vessels of the "Oregon" class.

The protective deck, of course, extends the full length of the vessel, curving down to meet the stem and stern. At the stem it is merged into the framing of the ram bow, and serves to stiffen the ram and transmit the shock of impact to the whole structure of the vessel. Above the 9-inch belt amidships and between the protective and the gun decks is worked another belt of 6-inch armour, which will prevent rapid-fire shells from penetrating and bursting beneath the guns on the gun deck above.

The gun deck carries the bulk of the rapid-fire armament. Amidships, above the 6-inch belt referred to, is a battery of eight 6-inch rapid-fire guns, mounted on

the broadside, with a considerable train forward and aft. The casemates through which these guns are fired are protected by 5 inches of steel, and protection is afforded against a raking fire by complete athwartship walls of armour. It should be mentioned that the 9-inch belts are also continued athwart the ship to form bulkheads for the protection of the engine and boiler rooms. Forward of the central battery on the same deck are eight 3-inch rapid-firers, and aft of the battery are four other guns of the same calibre.



DECK PLAN OF NEW RUSSIAN BATTLE-SHIP.

The upper or main deck is flush throughout the ship, except where it is occupied by the amidship superstructure. Forward and aft of the superstructure are two elliptical turrets, each of which will contain a pair of the most modern 12-inch guns. Within the superstructure, one at each angle, and commanding a wide range of fire from dead ahead to well abaft the beam, will be four 6-inch guns protected by Krupp armour. Between these on the broadside will be half-a-dozen of the effective little 3-inch rapid-firers.

One would think that this was armament enough to suit even a Russian battle-ship (for the Russians, like ourselves, are firm believers in the advantages of a crushing gun-fire); but there are yet thirty-four guns to be accounted for, and these will be found on the boat deck, the bridge, and the fighting-tops. Two 3-inch guns are mounted amidships on the boat deck, one on each broadside; six 1¾-inch rapid-firers are mounted forward and another half-a-dozen 1⅞-inch aft on this deck, while yet another dozen are mounted on bridges above these. Elsewhere are two 2½-inch rapid-firers, while from the tops half-a-dozen 1½-inch rapid-firers will add their storm of shells to the awful hail that will be poured forth from the bridges and boat decks below. The armament is completed by no less than six torpedo-tubes.

How the problem of supplying projectiles simultaneously to some seventy rapid-firing guns has been worked out, we are unable to state; but we are assured by the contractors that full provision has been made for every gun.

The ship will be driven by triple-expansion engines and steam will be supplied by Niclausse water-tube boilers of a combined capacity of 16,000-H.P., and this vessel will be the first battle-ship built in this country having a complete installation of water-tube boilers and machinery particularly adapted to the water-tube boiler. It should be mentioned that the turrets will be worked by electricity, and many of the auxiliary machines usually worked by steam will on this vessel be driven by electric motors.

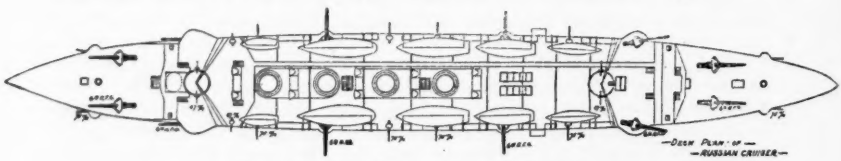
In the features of drainage, ventilation, the comfort of the officers and crew, this ship will be more than abreast of current practice in naval equipment. The requirements of the trials for speed, the amount of ammunition, and the various guns to be carried and adequately protected, together with the large amount of stores and outfit to be provided for, make the fulfilment of these conditions possible only to a company like that of the Messrs. Cramp, whose long and successful experience in designing and building vessels-of-war gives ample assurance that these difficult requirements will be fully met.

The 6,500-ton Cruiser.

The new cruiser will have the same characteristic features of speed, heavy armament, and radius of action that are conspicuous in the battle-ship. Her principal features are as follows :—

Length between perpendiculars	400 feet.
Beam	52 feet.
Draught, about	19 feet 6 inches
Displacement, about	6,500 tons.
Speed for 12 hours	23 knots.

The protective deck, which will run from stem to stern, will be 1½ inches on the flat and 3 inches thick on the slopes. The ship will be lighted by electricity, and the same energy will also be used for many of the auxiliaries. Wood will be used but sparingly, and everything will be done to reduce the risk of splinters and the danger of fire in action. As far as possible, the lessons of the war with Spain will be applied to the betterment of this vessel, and when finished in 1900, as she should be, the ship will be essentially up to date in every particular.



DECK PLAN OF NEW RUSSIAN CRUISER.

The armament will consist of twelve 6-inch Q.F. guns, twelve 3-inch Q.F. guns, and six 1·8-inch Q.F. guns, with four torpedo-tubes, two of which on the beam will be submerged. Eight of the 6-inch guns will be mounted in broadside on the main deck, the two forward and the two after guns on either side being placed in sponsons, permitting a dead-ahead and a straight-astern fire respectively. All will have very considerable arcs of fire. The four remaining 6-inch guns will be mounted two each on the forecastle and on the main deck abaft the after bridge. These guns will have all of the reach of fire their commanding positions make possible, and, like the eight guns amidships, will be well protected by heavy shields. This disposition of the 6-inch guns affords a bow and a stern fire of four pieces, and a broadside fire of six. The twelve 3-inch guns are mounted on the main and the berth decks. Eight of them are placed amidships between the broadside battery of 6-inch guns. Two others are put well forward in sponsons, just under the forecastle, while the last two are mounted in sponsons, one on either side, well aft on the berth deck. All of the guns have wide arcs of fire, and those at the bow and stern can fire ahead and astern respectively, parallel with the centre line. The small guns will be placed on the bridges and up in the tops.

As in the battle-ship, the cruiser's boilers will consist entirely of the Niclausse water-tube type. Attention is directed to the unprecedented conditions of trial for this ship, the high speed of 23 knots an hour having to be maintained for twelve consecutive hours. The same long period of full-power test is exacted in the case of the battle-ship, and it is certain that, if the Messrs. Cramp can successfully fulfil these severe requirements, the result will revolutionise the conditions of future speed trials.—*Scientific American.*

SPAIN.—*Admiral Cervera on the Spanish Fleet.*—The Office of Naval Intelligence in the United States has printed a translation of an article published in the *Epoca* at Madrid on 5th November, 1898, which contained some letters and reports written before the war by Admiral Cervera. He represented and reiterated to the Spanish Minister of Marine the unprepared state of the fleet, and made the

following specific allegations:—The "Cristobal Colon," purchased from the Italian Government, had no main armament, and the guns and ammunition of some of the cruisers built at Bilbao were unfit for service. The "Viscaya" lost from 3 to 5 knots of her speed owing to the foul state of her bottom; thus she not only hampered fleet manœuvres, but her coal consumption was dangerously increased. Admiral Cervera's pathetic documents are fully reproduced. Writing two years before the war, he stated that the whole fleet was disorganised, and when ordered to sail he wrote that the position was worse than at the earlier period. The United States fleet had been in the interval largely increased, and the Spanish fleet was strengthened only by the "Colon," with her gunless turrets, and by a few destroyers, which in the end proved to be unserviceable. He stated that the "Cataluna" was begun in 1890 and that her hull was not yet finished, owing to the "extenuation" and penniless state of the country. The "Alfonso XIII.," the "Filipinos," and the "Carlos V.," all built in Spain, were failures; the only good ships of the cruiser class were the "Viscaya," the "Oquendo," and "Maria Teresa"—three vessels constructed by Englishmen at Bilbao. The 'Viscaya's" principal guns were fitted with a breech-action which had been declared useless two months previously, and Admiral Cervera did not know it til just before he sailed. The cartridges were faulty, and there were no supplies beyond some 30 rounds per gun already on board. The admiral was able to obtain neither coal nor charts of the American seas, and only half the quantity of biscuit demanded from Cadiz, the principal Government dockyard. In his correspondence he rated the Spanish fleet at its best as 56,000 tons as compared with the 116,000 tons of the United States Navy, and, by an artillery formula, the Spanish gun-power at 50 against 132. In this calculation four considerable Spanish ships were included, which from various causes were unused throughout the war. Had the admiral by chance gained a tactical success, there was no repairing port for the Spanish fleet, except the impoverished Havana, whilst the United States had many good and well-supplied harbours. Cervera's prophecies of coming disaster continued up to the date of his leaving the Canaries for the Cape de Verde Islands and the West Indies, under direct orders from the Navy Board at Madrid. His last letter before the culminating catastrophe ends with "The final result is not doubtful. God be with us. Good-bye."—*Times.*

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS DURING DECEMBER, 1898.

General Sir G. R. Greaves, G.C.B., K.C.M.G., to be Colonel of the East Surrey Regiment. General Sir W. S. A. Lockhart, G.C.B., K.C.S.I., Indian Army, to be Commander-in-Chief of the Forces in the East Indies. Colonel R. B. Lane, C.B., to be a Colonel on the Staff to Command the Garrison of Alexandria, with temporary rank of Major-General. Major-General Sir B. Blood, K.C.B., R.E., to Command a 1st Class District in India. Major-General Sir W. F. Gatacre, K.C.B., D.S.O., to command troops in the Eastern District. Major-General the Hon. R. A. Talbot, C.B., to command troops in Egypt. Lieut.-General Sir H. Brackenbury, K.C.B., K.C.S.I., to be Inspector-General of Ordnance at the War Office. Lieut.-General Sir F. W. Grenfell, K.C.M.G., G.C.B., to be Governor and Commander-in-Chief at Malta. Major-General Sir H. M. L. Rundle, K.C.B., C.M G., D.S.O., R.A., to Command South-Eastern District. Lieut.-Colonel R. H. Morrison to be Deputy Assistant-Adjutant-General. Lieut.-Colonel F. R. P. Kane to be Deputy Assistant-Adjutant-General. Colonel W. S. M. Price, R. A. Med. Corps, to be Surg.-General; Colonel G. D'A. Jackson, Bengal Cavalry, to be Major-General; Colonel L. J. Oliphant, M.V.O., to be Major-General; Colonel (temp. Major General) A. FitzR. Hart, C.B., Commanding 1st Infantry Brigade, Aldershot, to be Major-General; Major the Hon. M. G. Talbot, R.E., to be Head of Egyptian Intelligence Department.

HOME.—On 1st January, 1898, the nationalities of the non-commissioned officers and men were 158,566 English, 16,485 Scots, 26,374 Irish, 8,275 born in India or the Colonies, 142 foreigners, and 2,551 not reported. The religious classification shows 142,290 belonging to the Church of England, 15,022 Presbyterians, 11,280 Wesleyans, 2,170 "other Protestants," 36,959 Roman Catholics, 2,121 Mohammedans, Hindus, etc. ; and, as before, 2,551 not reported.

It has been decided by the Secretary of State for War to apply to the whole of the horse and field batteries at home an arrangement for checking recoil, thus enabling the advantages of quick-fire to be realised. This arrangement, which is the invention of the Superintendent of the Royal Carriage Factory at Woolwich Arsenal, is exceedingly simple and comparatively inexpensive, and it has proved to be capable of greatly augmenting the speed of fire now attained by the Service artillery.

New Machine Gun.—The latest invention in the shape of a machine gun is the "Fitzgerald Machine Battery Gun," which fires at the rate of eight shots a second, and may be subject to any test, however severe and prolonged, of rapid and continuous fire, after and throughout which the barrels will remain perfectly cool and unaffected. The gun has two tiers of Lee-Metford barrels, four in each tier, and unlike the Hotchkiss, which works automatically after the first shot has been fired by hand, the firing is kept up by the constant agency of the operator. It is not boxed in at the breech in any way, and when the breech-block is depressed all the barrels can be seen clear through from breech to muzzle, by which arrangement all the parts are completely and easily accessible for cleaning purposes. It can be raised or depressed to any angle, vertical or horizontal. Its light weight (150 lbs.) and simplicity, viz., its freedom from springs, hoppers, water-jackets, etc., and also of belts and chains to carry ammunition, adapt it admirably for hard service. However rapid the action of the gun, one tier of barrels always remains loaded, and it possesses a simple and effective method of loading and ejecting the empty shells, which is said to render jamming impossible. The cartridges are placed beforehand in separate strips of aluminum, into which they fit in fours to correspond with the tiers of barrels, the breech-block, faced by an inch of steel, is placed in position by one movement, and the empty shells ejected without any break in the continuous firing of the gun. The carriage is also believed to be a very great improvement on other guns.

Canada.—The Government of Canada, on the recommendation of Major-General Hutton, C.B., commanding the Dominion Militia, has decided to introduce a modified Staff College course at the Royal Military College, Kingston, for the benefit of officers of the local forces. The first course will begin on 1st February, 1899, and will last until 1st June, the studies being conducted under the superintendence of Lieut.-Colonel G. C. Kitson, the commandant of the college, who is a graduate of the Staff College.

The New Chinese Regiment.—While the detailed arrangements in connection with the formation of a Chinese Regiment have not been finally decided upon, the following are the conditions which will probably be approved by the authorities. The regiment will be known as the 1st Chinese Regiment. It will be about 1,000 strong, and will be divided into eight or ten companies. The men will be collected from the Shantung province, within the 10-mile British limit. It had been proposed that recruiting should also be made in Hong-Kong, but this did not meet with general favour in view of the admitted superiority of the Northern Chinese. The terms of enlistment will be left in the hands of Colonel Hamilton Bower, Indian Staff Corps, commanding the regiment, who is now on his way to China. It is understood that the rate of pay will be somewhat higher than that of ordinary Chinese troops. The regiment will be for general service, and will be available wherever required, and not for Wei-hai-Wei alone. Mauritius has been mentioned as one of the first destinations of the regiment outside China.

The eventual full staff will number some twenty officers. The term of service will be among the matters settled by Colonel Bower on the spot. A distinctive uniform, probably a modified form of that worn by Chinese troops, will be eventually adopted for both officers and men. For winter wear officers will have a fur kit similar to that worn by Canadian troops. Colonel Bower will have as his second-in-command Major Bruce, West Riding Regiment. The company commanders already appointed each for a term of two years, renewable, are—Captain W. M. Watson, 2nd West Riding Regiment; Captain A. A. S. Barnes, 2nd Wiltshire Regiment; Lieutenant W. H. Dent, 2nd Yorkshire Regiment; and Lieutenant Molyneux-Montgomerie, 3rd Grenadier Guards. These officers, with the exception of Captain Barnes (who is travelling *viâ* America) left England for Hong-Kong by the P. and O. steamship "Oriental." At Hong-Kong they will either meet Colonel Bower or receive their final instructions from him. Six non-commissioned officers, who will act as drill instructors, are now *en route* for China on board the "Avoca." The Queen has directed that the new regiment should be known as the "1st Battalion of the Chinese Regiment of Infantry."

India.—The native infantry garrison of Burma has been fixed at nine battalions, of which seven will be local Burma battalions. Madras will thus have to supply two battalions only for this service in future from corps recruited outside the boundaries of the Burma command.

It has been decided to re-arm the batteries of heavy artillery in India. The Campbellpore Battery will be completely re-armed with the new guns before the end of the present financial year. The batteries at Jhansi, Secunderabad, and Mooltan will be re-armed during 1899-1900. The new guns are 5·4-inch howitzers, throwing shells laden with light explosives.

Examinations in Chinese.—The Government of India have decided to institute an examination in Chinese, with a view to encouraging the study of that language among officers of the Army in India. Rules have been drawn up and approved, which are applicable to officers belonging to the Indian Staff Corps, and also to continuous service R.E. officers and officers of the Indian Medical Service. These rules lay down that preliminary examinations will be held in Burma by the Adviser on Chinese Affairs between April 16th and May 15th and during the month of September in each year. Applications from candidates should be submitted to that officer through lieut.-generals commanding. The examination will be a simple one, just sufficient to show that an officer has learnt some words and can put them together in simple sentences. On passing this preliminary test an officer will be permitted to proceed on leave to Peking for a period of one year for the purpose of studying the language. The year's leave will be inclusive of the time taken in making the journeys to and from Peking. It will begin from the date of embarkation at Rangoon, which should be within a fortnight of receiving notification of having passed the preliminary examination. After nine months' residence in Peking an examination will be held in the Pekingese dialect. This examination will be held in Peking by the First Secretary, and will be a purely colloquial one, the standard being as follows:—*a.* Translation of English sentences into Chinese; *b.* conversation with the examiner; *c.* conversation with an educated Chinaman other than the candidate's teacher. Candidates must possess a fair colloquial knowledge of the Pekingese dialect, and must obtain a minimum of 50 per cent. of marks to pass. The text-book for the examination will be Sir Thomas Wade's "Tzu Erh Chi." This book is published by Messrs. W. H. Allen & Co. On passing the examination at Peking, candidates will be entitled to a reward of Rs. 1,000, and free passage to and from Burma and China will also be granted to successful candidates. An officer failing either at the preliminary examination at Rangoon or at the further examination at Peking must pay his own expenses. Examinations will be held in Peking twice yearly, on 1st April and 15th August, and to ensure nine months' study in Peking candidates should reach that place not later than 1st July or 15th November, giving timely

notice of their intended arrival to enable the Chinese Secretary to engage suitable teachers for them. Chinese teachers do not speak English. They can be engaged for about $20 per month, and officers will be responsible for their payment from the date of engagement. During the year's leave to China an officer will be allowed the Indian pay and allowances of his rank and the half staff salary of his substantive appointment. An examination in Cantonese may be passed by officers from India as a second dialect, but no special facilities on that account will be granted in such cases in the way of leave or free passage.

The Messing Allowance in India.—Owing to the misunderstandings which have taken place among the British troops in India as to the new messing allowance of 3d. a day, an extension of the date up to which soldiers may accept the new arrangement has been granted, and the limit was made to 1st January inst. The Order on the subject provides that men who elected the messing allowance rules in the first instance, but subsequently withdrew from them on learning that payment could only be made in kind and not in cash, can, if they so desire, claim that their original election shall hold good, and draw the allowance from the date they would have done had their election not been withdrawn. On the other hand, however, men who did not elect the rules after receipt of the orders permitting cash payment will only be entitled to the allowance from the first day of the month in which they elect the new terms.

British Garrisons in East Africa: Formation of New Regiments.—It has been decided to increase the British forces in the East Africa Protectorate and in Nyassaland. In the former case it is intended that a new regiment shall be established, the strength of which will depend largely upon circumstances. The recruits will be drawn from the various classes of natives in the Protectorate. There is no intention of increasing the garrisons in the neighbouring Protectorate of Uganda, the force there, even in view of the departure of the troops under Colonel Martyr, being regarded as sufficient for all purposes. The new regiment will be employed under the jurisdiction of Sir Arthur Hardinge in the East Africa Protectorate itself, the limits of which extend as far inland as Kikuyu, half way to the capital of Uganda on the Uganda road from the coast. This regiment will be commanded by British officers, who will be selected and sent out from England in due course. It has not yet been decided whether any non-commissioned officers shall be sent from home as instructors.

It is also stated that in pursuance of a private arrangement between the Foreign Office and the British South African Company, the territories of the latter in North-East Rhodesia to the west of the British Central Africa Protectorate, will in future be policed and garrisoned by the Protectorate troops. For this purpose a new force will be organised in Nyassaland, composed of Yaos and Atongas, which will be commanded by British officers, who will be despatched from India with a number of Sikhs, who will act as instructors.

New British Regiments for Central Africa.—The Foreign Office has asked the War Office for officers and non-commissioned officers to be appointed at once to proceed to the British Central Africa Protectorate, in order to train two new regiments of natives there which are being raised, and which are to be known as the British Central African Troops. One of the regiments is to be always available for service outside the Protectorate. Lieut.-Colonel Manning, Deputy-Commander and Consul-General for the district, has been given command of the new regiments, and is raising them among the Yaos natives. He will have several officers sent to him from England.

The Comparative Cost of Modern Armies.—In the JOURNAL of the Royal United Service Institution for 1876 (Vol. XX., pp. 218 *et seq.*) will be found an extremely interesting lecture by Captain (now Major-General Sir John) Ardagh, R.E., dealing with the comparative cost of modern Armies, and also with the loss which, in the lecturer's opinion, a country suffered which submitted to

conscription compared with one which, like England, relied on voluntary enlistment.

As the question of the comparative cost of Armies is one of great and constant interest, the writer has endeavoured in the accompanying tables to bring Sir John Ardagh's figures up to date, the various items also having been in some cases slightly amended so as to allow of a closer comparison with our own Army. The original numbering of the tables is at the same time retained, while Table II. is omitted altogether, as the information contained in it is for the most part shown by the remaining tables. Such information as is not so shown is, in the writer's opinion, of somewhat too problematical a nature to serve any useful purpose.

Tables such as these are, however, of little value unless they are accompanied by some account of the manner in which the different items are arrived at. The following remarks, therefore, explain the various calculations used for arriving at the cost per head of the infantry soldier in our own Army. The cost per head of soldiers in other Armies has been arrived at by methods as nearly identical as the peculiarities of the various Budgets will allow.

"Daily Pay" and "Messing Allowance" are taken at 1s. and 3d. respectively.

The item "G. C. Pay and Skill at Arms" is arrived at by dividing the totals (£72,500 and £10,300) on page 26, Army Estimates 1898-99, by 100,730, the total number of infantry, see page 10, excluding officers and warrant officers.

The item "Provisions" is obtained by dividing £1,263,000, the total cost for the Regular Forces (£1,841,000 less £578,000, the amount of messing allowance) on page 53, by 164,492, the total number of non-commissioned officers and men of the Regular Forces. In this, as in many other cases, it is impossible to distinguish between the infantry and the other branches of the Service.

As regards the item "Palliasse Straw," it is no longer possible, as in 1876, to separate this from the general account for Forage, see page 53. As, however, the proportion seems much the same now as it was in 1876, the average cost per head at that date, viz., 2s. 5d., has been retained.

In the same way the cost of "Fuel and Light" is no longer shown separately for regimental officers and men (page 54). The amount has therefore been taken to be the same as in 1876, viz., £1.

To arrive at the cost of "Lodging and Barracks," the three items N, Q, and T (total £562,012), on page 65, are added together and divided by 171,374, the total number of rank and file. The result, £3 5s. 7d., is probably somewhat in excess of the truth, as officers' quarters, mess buildings, etc., are included.

The item for "Clothing," etc., is taken direct from the table on page 58.

The item "Hospital Attendance and Medicine" is obtained by dividing the total charge for the Medical Establishment, including pay, allowances, etc., by 205,362, the average number of men, Regulars and Auxiliaries, under arms throughout the year.

The item "Education" is arrived at by dividing £64,400, the total of items E, F, and G, on page 76, by 164,492, the total number of non-commissioned officers and men.

The soldier's share of Chelsea and Kilmainham, and also his chance of an out-pension, are obtained by dividing the totals under these heads, on page 114, by the number of rank and file and the average number under arms respectively, allowance being made for the fact that the present non-effective votes provide for the pensions of a very large body of long service soldiers.

With regard to the question of the loss suffered by countries which submit to conscription, it may be said that, although at the time the lecture under consideration was delivered, it was undoubtedly true that conscription bore unfairly in many ways on the poorer classes, yet at the present time the system of universal service has been so improved and perfected in the chief nations of Europe that it appears difficult to imagine any more equitable method of distributing the burden.

TABLE I.

Statistics relating to the Cost of Armies in different Countries, 1898.

		England.	France.	Germany.	Russia.	Austria.	Italy.	America.
1	Population	40,000,000	38,517,975	52,279,915	94,188,750	41,358,886	31,290,490	71,263,000
2	Gross Annual Expenditure	£101,476,669	£136,551,221	£190,000,000	£230,320,300	£101,180,116	£66,986,134	£86,484,321
3	Taxation per head of population	£2 10 9	£3 10 10	£3 11 8	£2 8 0	£2 9 0	£2 2 0	£1 4 3
4	Net Army Estimates	19,220,500	25,182,055	29,000,000	45,126,353	15,109,248	8,203,812	9,870,028
5	Cost of Army per head of population	£0 9 7	£0 13 0	£0 11 0	£0 9 0	£0 7 0	£0 5 0	£0 2 9
6	Percentage of total Revenue spent on Army	·19	·18	·11	·20	·15	·13	·11
7	Average number under Arms ... ... *Peace Establishment.*	205,362	642,634	606,620	1,040,308	384,108	225,239	27,588
8	Head of population to one man under arms ,, ,,	194·77	62	87	90	107	135	2,588
9	Cost of Army—all ranks—per head ... ... ,, ,,	£93 11 10	£39 3 0	£47 16 0	£43 7 0	£39 6 0	£36 0 0	£358 0 0
10	Average number under arms ... ... *War Strength.*	473,351	2,293,788	2,700,000	2,791,294	1,245,278	1,326,200	—
11	Head of population to one man under arms ,, ,,	84·50	17	20	33	33	23	—
12	Cost of War Strength, in time of peace, per head	£40 12 1	£10 19 6	£10 15 0	£16 2 0	£12 2 0	£6 3 0	—
13	Ratio of Numbers—Peace Strength to War Strength	1 to 2·3	1 to 3·5	1 to 4·4	1 to 2·7	1 to 3·2	1 to 5·4	—
14	Ratio of Cost—Peace Strength to War Strength	1 to ·43	1 to ·27	1 to ·22	1 to ·37	1 to ·30	1 to ·17	—
15	Pay, Rations, Clothing, and Housing a Private of Infantry ...	£45 14 6	£14 7 4½	£17 19 0	—	£12 14 5	£16 7 0	£95 14 0
16	Prospective Advantages enjoyed by a Private of Infantry ...	£4 11 6	£3 1 2	£7 7 5	—	£3 14 0	£6 18 6	£18 16 0
17	Total Cost of an Infantry Soldier to the State	£50 5 0	£17 8 6½	£25 6 5	—	£16 8 5	£23 5 6	£114 10 0
18	Wages of a Labourer	£33 10 0	£36 0 0	£32 0 0	£10 10 0	£18 0 0	£19 0 0	£80 0 0
19	Wages of a Tradesman, Artisan, or Mechanic	£70 0 0	£42 0 0	£43 0 0	£20 0 0	£42 0 0	£32 0 0	£80 0 0
20	Number of males attaining military age each year	350,000	331,368	490,000	—	—	315,000	678,000
21	Annual Contingent of Recruits—Regulars	33,722	210,454	262,000	—	—	88,000	4,762
22	,, ,, Militia	33,837	—	—	—	—	81,000	—
23	,, ,, Total	67,559	210,454	262,000	—	—	169,000	4,762
24	Proportion of Annual Contingent to population	1 in 592	1 in 183	1 in 202	—	—	1 in 180	1 in 14,964
25	Percentage of men attaining military age who are trained ...	19	63	53	—	—	47	6

TABLE III.—ENGLAND.

Cost of an Infantry Soldier. Estimates 1898-99.

Vote.		Per Annum. £ s. d.
1	Pay	18 5 0
1	Messing Allowance	4 11 3
1	G. C. Pay and Skill at Arms	0 16 5
	Provisions	7 13 11
	Palliasse Straw	0 2 5
7	Fuel and Light	1 0 0
10	Lodging or Barracks	3 5 7
	Clothing and Necessaries	3 0 7
2	Hospital Attendance and Medicine	2 0 0
11	Education	0 7 9
15	Chelsea and Kilmainham	0 4 1
15	Out-Pensions	4 7 6
	Total	£45 14 6

TABLE IV.—FRANCE.

Cost of an Infantry Soldier. Budget 1898.

	Per Annum. £ s. d.
Pay	3 15 0
Travelling Expenses (Recruits joining and time-expired leaving)	0 7 2
Provisions	5 16 2
Bedding	0 13 10
Fuel and Light	0 6 3
Lodging or Barracks	0 12 3
Clothing and Maintenance of Arms	3 8 8
Hospital and Medical Attendance	0 10 0
Pensions—Invalides	0 0 5
Secours	0 7 6
Out-Pensions	0 12 9
Total	£16 10 0

TABLE V.—GERMANY.

Cost of an Infantry Soldier. Budget 1898.

	Per Annum. £ s. d.
Pay	3 19 0
Provisions	9 10 10
Lodging, Fuel, and Light	3 0 0
Clothing	2 16 0
Hospital and Medical Attendance	1 7 0
Education	0 1 2
Pensions	1 14 0
Total	£22 8 0

TABLE VI.—AUSTRO-HUNGARY.

Cost of an Infantry Soldier. Budget 1898.

	Per Annum. *Florins.* £ s. d.
Pay	21·90 1 16 6
Messing Allowance ("Menagegeld")	55·54 4 12 6
Bread	22·08 1 16 9½
Palliasse Straw (76 lbs. p.a.) and Bedding	3·61 0 7 6
Fuel and Light (6s. 4½d. Fuel; 1s. 9½d. Light)	4·90 0 8 2
Lodging and Barracks	3·44 0 5 8½
Clothing, Equipment, Arms, etc.	25·72 2 2 11
Hospital (includes Medical Corps cost)	14·07 1 3 5
Education (Chaplains' Department only)	·56 0 0 11
Invalid Hospitals and Pensioners' Establishments	44·41 3 14 0
Total	196·23 £16 8 5

N.B.—The actual cost has *increased*, since 1871, by over 18 florins; the rate of exchange, however, has *reduced* it, in English money, by £1 9s 0d.

TABLE VII.—ITALY.

Cost of an Infantry Soldier. Budget 1898.

	Per Annum. £ s. d.
Pay	2 18 4
Provisions	9 9 5
Lodging, Fuel, and Light	2 2 9
Clothing	1 16 6
Hospital and Medical Attendance	0 16 7
Education...	0 0 0
Pensions	6 0 8
Total	£23 4 3

TABLE VIII.—AMERICA.

Cost of an Infantry Soldier. Budget 1898.

	Per Annum. £ s. d.
Pay	38 8 0
Provisions	29 4 0
Lodging, Fuel, and Light	14 10 0
Clothing	13 12 0
Hospital and Medical Attendance	1 10 0
Education	0 10 0
Pension	1 0 0
Total	£98 14 0

AUSTRIA-HUNGARY.—*Boot-soles of Asbestos.*—Doctor Högyes, of Buda-Pesth, has invented a boot with inner soles, and imitation soles of asbestos fibre impregnated with a special material. The surface of this substance is rough, and not smooth like leather; slipping is thus avoided, as well as the heating, perspiration and abrasions which result from it. Asbestos being a non-conductor of heat, the feet keep a uniform temperature, which neither heat nor cold can affect. The trials made with this boot, by order of the "Honved" Minister, have given excellent results. The soldiers showed an unexpected endurance on the march, and 94 per cent. of men who suffered from their feet on marches with the ordinary boot, did not experience the slightest ill-effects with those with asbestos soles.

The *Deutsche Heeres-Zeitung* announces that, as a consequence of these results, the use of asbestos soles has been decided upon in making boots for the Austrian Army, Landwehr, and Gendarmerie.—*Bulletin de la Presse et de la Bibliographie Militaires.*

CONGO FREE STATE.—According to news received by the Government of the Congo Free State, a column of 200 soldiers, under the command of Lieutenant Stevens, was attacked on 4th November last, by insurgent Batetelas, and suffered a reverse. The insurgents afterwards marched on Kalambari, the garrison of which had been reduced. They captured this place on 14th November. The Congo State forces lost two officers and one non-commissioned officer killed, namely, Lieutenant Hardy, a Swiss; M. Rahbeck, a Dane; and Sergeant Ardevel, a Belgian. Two hundred of the native troops were killed. A lieutenant of Swedish nationality and two Belgian sergeants were wounded.

FRANCE.—Besides two battalions of Marine Infantry, two batteries of foot artillery are ordered to Senegambia. A battalion and a battery of foot artillery will be formed at Diego Suarez (Madagascar), to which about 800 Creoles of Réunion, liable to military service, will be called out. It is worthy of remark that this is the first time in a French colony that Creoles liable to service have been called out for duty with the colours.—*Neue Preussische Zeitung.*

The French Army has lately brought in a new knapsack which exhibits marked advantages over the old one, which is similar to the one in use in the German

Army. The two natural fulcrums of a load carried on the back are the neck and loins, and the greatest weight should be distributed on these two places to lighten above all the weight on the chest. The new French knapsack makes allowances for this demand. It is made of prepared cowhide, with unstiffened sides, so that it can be drawn in as closely as possible to the small of the back. The whole weight rests directly on the loins, to which it is held fast by a belt, which carries a cartridge pouch in front. The knapsack is supported at the neck by means of two braces which go down to the belt on each side over the shoulders. These are fixed to the back on the top of the shoulders by means of a cross strap, which equalises and divides the weight as far as possible over the whole back; it is, moreover, when connected with two wider straps, capable of carrying a reserve cartridge pouch. A knapsack so constructed frees the chest from all pressure and allows, as far as possible, for the perfect and unimpeded working of the lungs and heart.

The rest of the pack is dependent on the knapsack and independent of the system of straps, described above, and its weight depends entirely from the knapsack without detriment to the body.—*Deutsche Heeres-Zeitung.*

Motor Wagons.—During the last army corps inspection in France many experiments were made in this direction, and gave such satisfactory results that the War Minister has called together all proprietors of motor wagons, with their gangs of workmen, to take part in manœuvres. A short time ago Lieutenant Gérard gave a lecture at the "Cercle Militaire" on the employment of motor wagons in war-time. To him was especially entrusted the forwarding of Staff, Commissariat, and Government officials who were more or less unaccustomed to riding. These wagons could also be utilised in the forwarding of provision and ammunition trucks, by drawing them behind them, for they can easily travel from 25 to 30 kilometres in one hour, which the ordinary transport can barely do in seven. In this way, too, great economy in horseflesh would be brought into consideration, and it would also leave a considerable number of men free for other duties. In one way, especially, would the employment of motor wagons in war-time recommend itself, viz., the transport of the wounded to better provisioned hospitals nearer the base would become possible.—*Militär-Zeitung.*

GERMANY.—*The Employment of Police Agents reserved for Non-Commissioned Officers.*—On 16th November, 1896, a Cabinet Order of the German Emperor authorised, as a tentative measure, the admission into the Police of non-commissioned officers who had served for at least six years with the colours. On 5th October last, the Emperor decided to prolong this provisional arrangement to 30th September, 1901. Some military papers find fault with this measure, and assert that, nowadays, when it is more necessary than ever to keep non-commissioned officers as long as possible with the colours, many of them enter the Police service, and that this is detrimental to the efficiency of the Army.—*Revue du Cercle Militaire.*

Increase of the Army.—The Speech from the Throne announced a weighty piece of legislation, which is sure to be passed, with a few amendments, during the Easter Session. It provides for the re-constitution of the German Army on a peace footing, to be completed within a period of three financial years, dating from April, 1899, and to remain stationary in that form until the end of the fifth year on 31st March, 1904. The Standing Army is to be increased by 23,277 privates to a total number of 502,506. The permanent strength is to be reckoned at 23 army corps, with three Headquarter Staffs in Bavaria, two in Saxony, one in Wurtemberg, and 17 in Prussia and the rest of the Federal States. The financial scheme, which has been very carefully worked out, provides for a graduated incidence of the expenses through the four Kingdoms in the Federated Empire.

The lion's share falls on Prussia and Saxony; Wurtemberg and Bavaria pay a just proportion. The total annual cost is estimated at 27,388,000 marks during the five years, and a total special grant of 132,778,000 marks will be required by the expiry of that period, of which nearly 50,000,000 are demanded in the current Budget. This Bill is to be introduced immediately after the Christmas recess. The defences of the Empire by land and sea have thus received a substantial prospect of reinforcement by the legislation of 1898. The last days of the old Diet were occupied by the Navy's needs, and the first days of the re-elected House were devoted to the increase of the Army.

One of the most difficult feats that an army in the field has to perform is the crossing of wide rivers without means of standing bridges, which either do not exist at the required place, or else have been blown up by the enemy, and therefore useless. The construction of pontoon bridges takes up far too much time to be any good for a surprise, even supposing the extensive military transport, which carries the heavy bridging pontoons with it were on the spot. The German military administration have endeavoured for many years to equip troops with light and portable means of crossing rivers. The folding-boat, that has recently been brought in, has proved to be the best.

These had such satisfactory results in the experiments and trials carried out by the Guard Pioneers in Berlin, that even the cavalry is equipped with these folding-boats, which combine lightness, considerable capacity and small compass, with an almost instantaneous adaptability. The boats have a wooden keel, and thin wooden longitudinal ribs, which are covered with brown water-tight canvas. The wooden body is divided in the centre, and the whole boat can be fitted together or folded up from both sides. In this condition one man can carry it easily under his arm, two men can bring it at the double. With one touch it is pulled apart and placed in the water, a man immediately steps into it and the weight of his body presses the ribs apart, the canvas becomes taut, and the boat is ready for use.

With a quantity of such folding-boats small infantry and cavalry detachments can be transported across, in the latter case by the men sitting in the boats, the horses swimming alongside, held by the bridle. In the case of larger divisions, the pioneers could throw across a flying bridge of these folding-boats. The boats could soon be placed in a row across the river, at the same time transverse beams or baulks carried with the boats, and provided with rack sticks, would be laid on the boat, and these covered with light planks or chesses held together by means of the rack sticks. In this way, in the shortest possible time, a narrow, and naturally a swaying, but at all events a sufficiently secure, gangway is ready. Whilst one pontoon took up almost an entire wagon, ten to fifty of such folding-boats can be loaded on one wagon, which always remains with the troops, and does not detract from their mobility. The above-mentioned trials were carried out by the guard pioneers, partly in conjunction with other arms, during the month of August of last year.—*Militär-Zeitung.*

An Imperial Cabinet Order enjoins the employment of certain German or Germanised expressions in lieu of corresponding terms wholly or partly of foreign origin which have hitherto been in use in the Army. The Cabinet Order says that "while entirely respecting traditional usages" the Emperor desires to promote in the Army the use of pure German. In future, therefore, the word "Offizier-aspirant" will be superseded by "Fahnenjunker"; "Portepee-Fähnrich" by "Fähnrich" (ensign); "Second-Lieutenant" by "Leutnant"; "Premier-Lieutenant" by "Oberleutnant"; "Oberst-Lieutenant" and "General-Lieutenant" by "Oberstleutnant" and "Generalleutnant"; "Charge" (rank) by "Dienstgrad"; "Avancement" (promotion) by "Beförderung"; and "Anciennetät" (seniority) by "Dienstalter."

ITALY.—The War Budget for 1899–1900 amounts to 222,970,000 francs for ordinary and to 1,470,000 for extraordinary outlay, viz., to a total of 224,440,000 francs. But the Minister of War will ask for a special credit vote of 14,560,000 francs for the re-organisation of the field artillery, thus the total output of his department will amount, as usual, to 239 millions. The effective strength of the Army for 1899–1900 is fixed at 13,527 officers, 212,000 men, and 46,162 horses, besides which 93,000 reservists will be called to the colours for a period of instruction for at least twenty days.—*Revue du Cercle Militaire.*

The *Tribuna* publishes an account of the various forces at the disposal of the military commander in Erythrea should the Abyssinians attack the colony. As there is no intention of ever taking the offensive against Abyssinia, it will be seen that those forces are quite sufficient to hold the fortified positions which bar the roads by which the enemy would have to pass.

These positions are Cheren, Asmara, Saganeiti, and Adi-Ugri. All four are in a complete state of defence, and supplied with water and cisterns, so that they could resist for at least three months. The Fort of Adi-Ugri is especially strong, as since the battle of Adowa the Italian Government has spent more than £120,000 on it.

It was the desire of the Government to retain this fortress, which led to Captain Cicco di Cola being instructed to negotiate for the inclusion of Adi-Ugri in Italian territory. The frontier originally agreed on by Major Nerazzini and the Negus would have left Adi-Ugri in the possession of Abyssinia.

The forces now ready are six battalions of Ascaris, or native troops, each 600 strong, a white battalion of 500 men, two native batteries of artillery with 24 guns and 300 men, a squadron of native cavalry, and a camel corps of 150 men. In addition, the native Militia could furnish 3,200 men.

In all, the Erythrean commander could have nearly 8,000 troops of all arms at his disposal.

RUSSIA.—The increase of pay of officers is practically decided upon. According to the *Rousskii Invalid,* which publishes a long article on this subject, the increase of actual pay, not counting lodging allowance, will be given in such a manner that subaltern officers (ensigns, sub-lieutenants, and lieutenants) will principally profit by it, for the increase to them will be from 38 per cent. to 61 per cent. according to their rank. For captains the increase will be 22 per cent., and for commanding officers of battalions (lieut.-colonels) 26 per cent.

For officers of superior rank the increase will be:—

Commanders of regiments	5	per cent.
Commanders of brigades	13	,,
Commanders of divisions	14	,,
Commanders of army corps	11	,,

The increased annual expenditure of this increase of pay will amount to about 11 million roubles, of which only 630,000, that is to say, less than 6 per cent. will be for the pay of the superior ranks above mentioned, and the rest of the amount will be entirely absorbed by the increase granted to officers of inferior rank, that is to say, from commanders of battalions downwards.—*Revue du Cercle Militaire.*

The *Vedette* (military supplement of the *Reichswehr* of Vienna) gives particulars of the latest available report on the sanitary condition of the Russian Army, which refers to the month of March last. The medical inspector-general reported that out of every 1,000 men 27·8 were ill in the course of that month, of whom 12·5 died. This, though unsatisfactory, is an improvement upon previous reports. The greatest mortality was in the St. Petersburg military district and among the Cossacks of the Don, and the least in Finland. Apart from the Cossacks, the

health of the 1st Army Corps and of the troops of the Guard was the worst. Acute and chronic tuberculosis were responsible for nearly 27 per cent. of the sickness, typhus for 15·7 per cent., and pneumonia 15 per cent. Ophthalmia was common.

Aluminium horseshoes will shortly be subjected to increased tests in a certain dragoon regiment. In order to be able to draw comparisons between those of ordinary iron and those of aluminium from the wear and tear point of view, each horse will be shod half with shoes of the old and half with shoes of the new pattern. Hitherto the trial has been entirely in favour of the aluminium shoes. The horseshoes of the new pattern are considerably lighter than the old ones, wear out less quickly, and withstand the damaging effect of moisture better.—*Deutsche Heeres-Zeitung.*

Officers' School of Musketry.—The Officers' School of Musketry, which has been established at Oranienbaum since 1882 for the preparation of the older, and especially capable captains of infantry for the Staff Corps, and for the promotion of musketry training, has been made the subject of a new regulation, by which tactical perfection is brought to the front more than formerly, and the number of scholars is increased. A distinction is made between the fixed strength of a company sent to the school for purposes of instruction, and the fluctuating strength of commanding officers, and of those mixed detachments of all arms sent there in the summer. Whilst the number of officers ordered to the school has hitherto only been about 100, it is now raised to 160, in which are included some from the railway battalions, from the Navy, and from the Finnish Light Infantry battalions, but no Guardsmen. Age not over 45 years, and the previous command of a company for at least two years are essentials. The yearly curriculum of the course, which is divided into several phases, begins on the 1st February, and lasts for seven months. The first phase, to the 1st May, consists principally of instruction and practical work in class; the second phase, to the termination of the camps of exercise, consists of practical training, especially musketry in the camp at Krassnoe Selo; the third phase, about four weeks, is entirely composed of training in the transport of detachments of mixed arms of the Service. Herein lies the principal innovation, and on which great stress will be laid in the certificates awarded. Specially selected staff officers will be selected to officiate as teachers and instructors by the Director of Schools. It is, in short, a magnificently arranged, and a most practical institution.—*Militär-Zeitung.*

SPAIN.—*Re-organisation of the Army of the Peninsular.*—The *Diario Official* of the 25th November publishes a Royal Order on this subject, of which the following is a *résumé*. On account of the return to the Peninsular of the first battalions of infantry regiments, the battalions of Chasseurs, and of the battalions of Sappers, who formed part of the expeditionary force of Cuba, the Queen Regent has decided that the infantry of the Line of the Active Peninsular Army shall consist in future of 56 regiments of two battalions, and 20 battalions of Chasseurs, each battalion consisting of four companies. Each regiment of the Line will have an effective strength of 1 colonel, 2 lieut.-colonels, 3 commandants, 13 captains, 16 first lieutenants, 10 second lieutenants, 1 chaplain of the second class, 1 doctor of the first and 1 of the second class, 1 bandmaster, 2 armourers, 25 sergeants, 52 corporals, 16 soldiers of the first class, 652 of the second class, a band of about 60, 6 horses, and 2 mules. The Queen's Regiment has, in addition, 8 sergeants, 32 corporals, and 356 soldiers of the second class.

Each battalion of Chasseurs will be composed of 1 lieut.-colonel, 2 commandants, 7 captains, 8 first and 5 second lieutenants, 1 second-class chaplain, 1 first-class doctor, 1 bandmaster, 1 master armourer, 13 sergeants, 25 corporals, 8 soldiers of the first and 400 of the second class, a band of 36, 3 horses, and 1 mule.

The four regiments of Sappers will be made up into two battalions of four companies each, each regiment having 41 officers and 1,580 men.—*Revue du Cercle Militaire.*

Effects of the Bullet of Small Calibre.—The *Gazette de Cologne* describes as follows the effect of the Mauser bullet in the fighting round Santiago-de-Cuba between the Spaniards and the Americans. The state of the bodies of some men hit at short range was such that they might easily have been believed to be mutilated. The wounds presented very diverse characteristics, and were sometimes very large at the orifice, and sometimes barely perceptible; in the latter case there was always internal hemorrhage. Fragments of cloth or other foreign matter were seldom discovered in the wounds. If one compares these results with those that occurred in Italy, during the recent troubles at Milan, it proves a similarity in the effects of the Spanish and the Italian rifle.

"From the groin to the head," declares Lieut.-Colonel Mariani of the Artillery, "the wounds were almost always mortal, and that, not only on account of the importance of the parts traversed by the bullet, but by the terrible lacerations produced in the tissues, and by the largeness of the orifice at its exit. In the limbs, the hole, very small at the entry, was very large at the exit of the bullet, and the bones were found to be so shattered that amputation was frequently necessary. In short, the havoc caused by the bullet was frightful." At long ranges the wounds produced by the Mauser bullet, between the groin and the head, recovered without difficulty. Thus wounds in the abdomen hardly ever demanded the intervention of surgery.—*Bulletin de la Presse et de la Bibliographie Militaires.*

SWITZERLAND.—*A New Balloon.*—The *Constanzer Zeitung* reports:—The balloon is shaped like a fish or boat, and is 16 metres long, 4 wide, and 8 high. Its concavity contains about 300 cubic metres. Inside there is a wooden frame covered with aluminum plates rivetted together and cemented. Three specially constructed lamps, in the lowest part of the concavity, supply the balloon with warmed and, consequently, rarefied air, to raise the weight, which is reckoned at 1,000 kilogrammes, including the two aeronauts. Right and left outside the vessel two windmill-like sails, with a surface of two quadrilateral metres, are set, which can be propelled by hand from the driving chamber. The screw sails should, together with the rudder at the after part of the balloon, be able to turn it as one likes. From a valve fixed on the top cold air can be let into the balloon, thus causing it to descend. This interesting construction is almost ready, and Herr Weisenrieder will shortly make an ascent.

UNITED STATES.—*Reports on the Army.*—The report of Adjutant-General Corbin seems particularly interesting, and is a regular statistical work on the increase of the Army at different stages of the late war.

On the 1st April, 1898, the Regular Army had a total strength of 2,143 officers and 26,040 men, in May the Army numbered 2,191 officers and 41,934 men, and in August 2,323 officers and 56,365 men.

The Volunteer Army ranged from 6,224 officers and 118,580 men to 8,785 officers and 207 244 men during the same period. Thus the combined forces reached their highest effective strength of 11,108 officers and 263,609 men in August. The Volunteers have already been reduced by 100,000 men, by disbanding nearly one-half of those engaged, at the conclusion of hostilities.

It is proved that the enlistments in the Regular Army were raised to 29,521 for the year terminating 30th June, of whom 24,490 were Americans by birth, and 5,031 foreigners. In this total were 27,140 whites, 2,345 men of colour, and 36 Indians. Exclusive of 5,273 re-engaged men, the natives represent 87 per cent. of the effective strength, the rest being composed of

naturalised Americans. This proportion is the effect of the law of 1894, according to which every man (except Indians) who is not a citizen of the United States, who has not applied for naturalisation, who cannot speak, read, and write English, or who is more than 30 years old, cannot enlist in the Army. This measure has given excellent results during the war, for the Regular Army has given entire satisfaction. Thus in the 5th Corps there was not a single instance of a court-martial.

The Adjutant-General ends his report by insisting that officers of higher rank than that of lieutenant should be selected for the duties of military *attachés*, officers of this rank being at present frequently selected for that office. This rank compares unfavourably with that of *attachés* of other nations, and is the cause of involuntary humiliation to American officers. Besides which the pay is too small and has a damaging effect on the American representation.—*Revue du Cercle Militaire.*

Army Re-organisation Bill.—The following shows the number of regimental organisations and the number of officers provided for by the two Bills (the Miles and the Hull) for re-organising the Army, now before Congress :—

	Miles Bill	Hull Bill.
Generals	1	0
Lieut.-Generals	2	1
Major-Generals	8	6
Brigadier-Generals	22	12
Colonels	81	58
Lieut.-Colonels	81	56
Majors	243	168
Captains	972	812
1st Lieutenants	1134	830
2nd Lieutenants	972	672
Total Officers of the Line	3516	2615

	Miles Bill.	Hull Bill.
Regiments—Engineers	2	0
,, Cavalry	15	12
,, Artillery	16	14
,, Infantry	50	30

That the proportion of officers asked for in the Miles Bill is not excessive, and still less so in the Hull Bill, is shown by the following comparison with the relative strength of officers and men in the English Army :—

Regt. Cavalry.	England.	Miles.	Hull.
Officers	31	43	47
Men	581	1000	1320
Battery Artillery.			
Officers	5	3	3
Men	174	100	121
Battalion Infantry.			
Officers	29	13	13
Men	1012	400	580
Officers to men, 1 to	27	26	32

At a Cabinet meeting held on the 23rd December it was definitely decided to order immediately the muster out of 50,000 Volunteers, and Adjutant-General Corbin has already issued preliminary orders to this effect. For some time the President and the Secretary of War have had under consideration the question of disbanding nearly the entire Volunteer Army, but they considered it unwise to take any definite steps to that effect pending the signing of the peace treaty

between the American and Spanish Commissioners. Re-assuring reports have been recently received from the American officials in Cuba, which will make it clear that it will be unnecessary to send as large an army to the island as has been in contemplation. These reports also show that it will be unnecessary to maintain any large reserve force in the Southern States as a precautionary measure against outbreaks in Cuba. As far as possible, Regular troops will be sent to Cuba, Porto Rico, and the Philippines, to relieve the Volunteers. The authorities feel confident that Congress will authorise a large increase in the size of the Standing Army, and hence no trouble is anticipated in having a sufficient force to garrison adequately the foreign possessions Adjutant-General Corbin feels confident that the muster out of the fifty Volunteer regiments will be accomplished by the last of January. The officials of his department are now thoroughly familiar with the duties of such work, and therefore there should be no unnecessary delay. As far as possible the State quotas will be respected in selecting the regiments for discharge. —*Army and Navy Journal.*

The New York correspondent of the *Daily News* recently gave information regarding the tests of the new guns made at Sandy Hook before the Board of Fortifications. The first gun tried was one constructed at Cleveland, Ohio, after a design by Dr. Gatling, inventor of the Gatling gun. It is of 8-inch calibre, and made of cast steel. It withstood successfully a powder pressure in the chamber of approximately 37,000 lbs. to the square inch. This is considerably in excess of present Army pressures. The service pressures demanded in the present Army built-up gun are 32,000 lbs. to the square inch, and in Navy guns 30,000 lbs. Six shots were fired, the first powder charge weighing 132 lbs., and the next two 135 lbs. each, and the remaining three 142 lbs. each. The gun exhibited no signs of strain. It is proposed to fire in all 300 rounds, and the pressure will be increased at various stages of the trial. It is not unlikely that the gun will be tested to destruction. Having withstood a pressure of 37,000 lbs., it is desirable to know the remaining factor of safety.

Dr. Gatling cast his new gun in an ordinary gun mould. After boring, the piece was subjected to an enormous heat pressure on the exterior surface of something like 2,000° Fahr. During the application of the heat a column of cold air was projected through the bore of the gun. After two hours of air application, a slight discoloration of the metal was observed along the bore. Six hours later, the same discoloration was noticed on the exterior surface. It was evident that the cooling effect had penetrated from the bore outwards. During the process of casting, a radial twist was given to the mould. The secret part of the operation is in connection with the alloy used in the steel. According to Dr. Gatling's estimate, the cast-steel gun can be made for about 50 per cent. less cost than the built-up gun, and while one built-up weapon is in process of construction eight cast-steel pieces can be turned out.

Intelligence has since been received that the Gatling cast-steel 8-inch gun burst on the firing of the thirteenth round.

Following the trial of the cast-steel weapon, several rounds were fired from the Sims-Dudley dynamite field-gun. The ranges were 1,500 and 2,000 yards. Great holes were torn in the ground large enough to hide a horse and wagon. In the opinion of officials of the Board, nothing living could exist within 50 feet radius of the point of explosion. Powder charges were used to propel high-explosive shells. Powder gases were cushioned upon shells, after a principle somewhat resembling that used in ejecting torpedoes from the Whitehead tube.

It is reported by the military *attachés* of the United States that Turkey, Argentina, Chile, Mexico, Sweden, and Brazil will adopt the Spanish Mauser rifle exclusively, owing to its performance in the Spanish-American war. Brazil, Chile, and Mexico will use the 0·276-inch calibre; Turkey and Argentina the

0·301-inch, and Sweden the 0·256-inch. The Krag-Jorgensen rifle adopted by Norway will have a calibre of 0·256-inch. The United States rifle is 0·30-inch.

The Spanish Mauser is an improvement on the Belgian Mauser, which is essentially a German weapon. It is considered by Continental experts to be the best army rifle in existence. The Canadian Militia and Volunteers have the Lee-Enfield, an improvement of our Lee-Metford rifle. The Lee-Enfield has five grooves, each ·005-inch deep, the Lee-Metford has seven grooves, each ·003-inch deep. Cordite is responsible for this change of rifling, as it wears the grooves. A Lee-Enfield fired 13,000 times is still good.

NAVAL AND MILITARY CALENDAR.

DECEMBER, 1898.

1st (Th.) 3rd Bn. Royal Fusiliers sailed from Southampton for Malta in the "Avoca."
,, ,, H.M.S. "Philomel" commissioned at Devonport.
2nd (F.) 2nd Bn. Manchester Regiment arrived at Southampton from Aden in the "Dunera," and took over quarters at Manchester and Lichfield.
4th (S.) 2nd Bn. Lancashire Fusiliers left Crete for Malta.
,, ,, H.M.S. "Astræa" and "Blake" paid off at Devonport.
,, ,, Launch of torpedo-gunboat "Fulmine" at Sestri Ponente for Italian Navy.
6th (Tu.) 2nd Bn. Lancashire Fusiliers arrived at Malta from Crete.
,, ,, 2nd Bn. Cameron Highlanders made their first move since they were raised, from Fort George to Aldershot.
,, ,, H.M.S. "Niobe" commissioned at Devonport.
7th (W.) 1st Bn. Gordon Highlanders arrived at Liverpool from India on the "Menes."
,, ,, 2nd Bn. Loyal North Lancashire Regiment left Aldershot for Dover.
9th (F.) The 1st Bn. Gordon Highlanders arrived in Edinburgh from Liverpool.
11th (S.) Fashoda evacuated by the French, and the British and Egyptian flags hoisted on fort.
14th (W.) H.M.S. "Buzzard" left Plymouth for West Indies.
,, ,, H.M.S. "Philomel" left Plymouth for West Coast.
,, ,, H.M.S. "Cordelia" paid off at Portsmouth.
,, ,, Launch of torpedo-boat destroyer "Shinonome" from Thornycroft's Yard for Japanese Government.
15th (Th.) Launch of first-class battle-ship "Irresistible" at Chatham.
,, ,, H.M.S. "Forte" paid off at Chatham.
17th (Sat.) N Battery, R.H.A., arrived in England on the "Dilwara."
20th Field Battery ,, ,, ,,
32nd ,, ,, ,, ,, ,,
19th (M.) H.M.S. "Scout" paid off at Portsmouth.
,, ,, Vice-Admiral Sir H. Stephenson struck his flag on board "Majestic."
20th (Tu.) Vice-Admiral Sir H. Rawson hoisted his flag on board "Majestic" at Portsmouth.
26th (M.) The Dervishes under Emir Fedil were defeated whilst crossing the Nile south of Rosaires by Colonel Lewis with 10th Soudanese Regiment. British loss 27 N.C.O.'s and men killed, 124 wounded; Dervish loss 500 killed and 1,500 prisoners taken.
27th (Tu.) 1st Bn. Highland Light Infantry arrived in England from Crete in the "Verona"

FOREIGN PERIODICALS.

NAVAL.

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AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* No 1. Pola and Vienna: January, 1899.—"The Development of the Imperial Navy in the last 50 Years." "On Mirages." "On the Coal Supply and Coaling of Ships-of-war." "Successful Gunnery Practice at Sea." "Graphic Determination of Local Time." "On a New Adjustment of the Compass Needle." "On the Development of Ships' Armour."

BRAZIL.—*Revista Maritima Brazileira.* Rio de Janeiro: November, 1898.—Has not yet been received.

FRANCE.—*Revue Maritime.* Paris: November, 1898.—"The Battle of Cavite." "On a Problem in Kinematics." "The Battle of La Hogue (1692)." "The English Cruiser 'Diadem.'" "The Crews of Italian Ships." "The *Personnel* embarked on board the Italian Fleet." "Submerged and Above-water Torpedo-tubes." "Russian Expeditions in the Pacific Ocean in 1895-96." "The Maritime Fisheries."

Le Yacht. Paris: 3rd December, 1898.—"The Naval Budget for 1899." "Yachting Notes." 10th December.—"The Radius of Action for Ships-of-war." "Yachting Notes." "The Shipbuilding Programme for 1899." "Vessels of Small Tonnage in Bad Weather." "The Question of Tonnage for Yachts." 17th December.—"The Naval Budget for 1899." "Yachting Notes." "Increase of the Cadres of the Navy." "The Question of Tonnage for Yachts." "Trials of the New Messageries Maritimes Mail-steamer 'Tonkin.'" 24th December.—"The Report of the United States Secretary of the Navy." "Yachting Notes." "Vessels of Small Tonnage in Bad Weather" (*continued*). "The Merchant Marine, French and Foreign." 31st December.—"The *Défenses-Mobiles* in 1899." "United States Yachts transformed into War-vessels." "Yachting Notes." "The Question of Tonnage for Yachts."

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"On the Reciprocal Action of Electro-Magnetic Resonators" (*concluded*). "A New Text-Book of Astronomical Navigation." "Sketches from the Spanish-American War" (*continued*). "The Hygienic and Sanitary Conditions of Funchal." "Modern Breech-blocks for Q.F. Guns" (*concluded*).

ITALY.—*Rivista Marittima.* Rome: November, 1898.—"The Torpedo-boat Family." "The Navy, Finance, and Politics." "Modern Naval Thought." "The Question of Frontier between Chili and Argentina." "Magnetism in the Navy." "The State, and the Cultivation of the Seas." "Mahan and Calwell." "Naval Notes." "Notices of Books, etc." Illustrations: The Spanish Ships after the Battle at Santiago (four plates).

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BELGIUM.—*Bulletin de la Presse et de la Bibliographie Militaires.* Brussels: 15th December, 1898.—"The Corps of Officers and the Command in Germany." "War and National Economy." "Infantry Fire." 30th December.—"War and National Economy." "Infantry Fire." "Summary of Military Reviews."

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during 1877." "Composite Expeditions by Sea." "The Ground-work of Equitation and Training." "On the Rapid-firing of Field Batteries." "On the Article 'The Commissariat Officers of an Army Corps.'" "Examination of Astronomical, Geodesical, and Topographical Works completed in 1897." "The Sanitary Condition of Cavalry Horses, and its Influence on their Preparedness for War." "Remarks on Military Administration." "The Trans-Caspian Region during the last Eight Years." "On the way to Abyssinia." "The Grand Manœuvres of the Armies of Western Europe during the current year."

SPAIN.—*Memorial de Ingenieros del Ejército.* Madrid: December, 1898.—"Profile of Coast Batteries in Exposed Positions." "New Triangular Geometry" (*concluded*). "The Automatic Mechanical Fort of the Twentieth Century" (*concluded*).

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NOTICES OF BOOKS.

The Campaign in Tirah, 1897-98. By Colonel H. D. HUTCHINSON, Director of Military Education in India. London: Macmillan and Co., 1898.

This book appears somewhat opportunely, just as the Afridi Jirgahs have accepted the terms of the Government of India, and apparently have settled down to their normal occupations. How long this peaceful attitude will withstand the temptations which interest or fanaticism may place in their way, only time can show, but it would be too much to hope that the expedition of last year has effectually quelled the spirit of disorder which is inherent in the character of these border tribes.

Colonel Hutchinson accompanied the Expeditionary Force as *Times* Correspondent, and republishes with some further remarks the letters which he wrote during the operations. They are brightly written, and give a realistic picture of the difficulties overcome, though—perhaps naturally—we miss the trenchant criticism which has become associated at home with the military articles in the *Times*.

The arguments for and against an expedition composed of columns of the size adopted are clearly set forth; it is self-evident that difficulties of any force with an unwieldy transport in a roadless country increase enormously in proportion to the number of men employed, yet the force must be large enough to beat any enemy it may meet. As the Director of Military Education almost pathetically remarks:—"All calculations as to time and space are simply set at naught by conditions such as obtain in a country like this" It is to be hoped that the experience which is now to be given to the troops in mountaineering practice may lessen the difficulties in future.

The campaign naturally divides itself into four phases:—

1. The advance to Maidan.
2. The punitive operations undertaken from this and other centres.
3. The movement eastwards to join the Peshawar Column.
4. The operations round the Khyber.

The resistance in force was overcome during the first phase, and practically ceased after the second action of Dargai.

The work of the second phase was that of what in South Africa would be called "Patrols," but one of the essential principles of this class of warfare was from the nature of the country impossible, namely, that the force should return by a different route from that by which it advanced; to return by the same route is an invitation to an enemy, who are past-masters of the art of warfare by ambush.

The third phase involved perhaps the greatest sufferings: the roads were more difficult, the weather grew worse, the enemy was ever on the watch and seldom inactive, and the column was hampered by a daily increasing number of wounded. That the troops came through it as they did is a tribute to the efficiency of the British and Native regiments employed.

The operations in and about the Khyber Pass formed the fourth phase, and differed in no material degree from those which had gone before: the night firing, the attack of rear guards and isolated bodies, the disproportionate wounding of officers, were all repeated; the work done was useful, but the glory gained was small.

The correspondence of the Mullahs, given as an appendix to Chapter X., relating their negotiations with the Amir, is from a political point of view significant.

The maps, plans, and sketches given in the book are clear and to the point; the same cannot be said of some of the other illustrations.

The book is valuable as giving what may be accepted as the official view of the campaign; but the experiences of the regimental officer are a necessary complement of the full history of the operations.

The Royal Navy List Diary and Naval Handbook for 1899. By Lieut.-Colonel F. LEAN, R.M.L.I. London.

The Royal Navy List is a work of such undoubted value to naval officers, that we have no hesitation in drawing attention to the Diary and Handbook which the editors have issued in conjunction with the Navy List, as it contains an immense amount of information, which will be found very useful and handy for reference by officers. Among the contents is a summary of the year's naval progress; an obituary for the past year, with the war and other services of deceased officers; the fleets of Britain and foreign Powers, with a comparative table of the first-class battle-ships of the principal Navies; English and foreign weights and measures and money; postal regulations, and a good deal of useful astronomical matter, with the coming celestial phenomena for 1899. The book ought to be as popular as the Navy List.

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Captain K. M. Davie	Gloucestershire Regiment.
Captain S. Jervis	South Staffordshire Regiment.
C. F. Romer, Esq.	Royal Dublin Fusiliers.
*Brevet-Major A. J. Godley	Royal Dublin Fusiliers.

* Specially nominated for admission to the Staff College.

The undermentioned Officers also qualified but there were no vacancies for them—

A. Symons, Esq.	13th Hussars.
Captain D. Arbuthnot	Royal Artillery.
*Captain J. A. S. Tulloch	Royal Engineers.
P. O. Hazelton, Esq.	Army Service Corps.

* Obtained FULL MARKS in one paper in Mathematics.

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65th ,,	A. C. Gunter	7978
72nd ,,	T. R. Fraser-Bate	7709
74th ,,	G. E. Smart	7626
85th ,,	G. K. Gregson	7266
Militia Artillery	F. E. Koebel	—

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29th ,,	E. H. F. Apthorpe	7623
31st ,,	W. J. B. Masters	7572
37th ,,	W. Greatwood	7431
49th ,,	J. H. C. Templeton	7077
62nd ,,	W. A. Gover	6877
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